The Hunterian Oration

ON THE

TREATMENT OF WOUNDS IN WAR.

Delivered before the Royal College of Surgeons of England on Feb. 15th, 1915,

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(With Illustrative Plate.)

GENTLEMEN,—It is now nearly 122 years since the death of John Hunter, and since that time 67 orations have been delivered in his memory, most of them dealing with his life and work. Although I have not read these orations it did not seem likely that there was much left for me to say, but after perusing his works I thought that there might still be something fresh in a consideration of his scheme of life and disease in the light of our present-day knowledge. When, however, this war began so many other more pressing interests arose that I began to doubt whether such an oration would really be of interest, and therefore I gladly fell in with the wishes of some of the more warlike of my colleagues, and shall devote the greater part of this hour to the consideration of a very important subject—viz., the treatment of wounds in war.

JOHN HUNTER: HIS WAR EXPERIENCE.

John Hunter was always trying to solve puzzles. He never met with a point which he could not understand but he tried to find out its meaning, and his museum is an indication of the multifarious things in which he was interested and of the many facts which he collected with regard to them. At the same time he had that great characteristic of true genius, a vivid imagination, and he was always weaving theories to explain his puzzles and modifying or adding to them as seemed necessary. In this way he built up his great scheme of disease, which is full of ingenuity and interest. It does not, it is true, occupy any important place in the teaching of the present day, but the reason for that is that he had so few really basal facts to theorise on.

Among the many puzzles that we have to deal with there is none more urgent or important, especially at the present time, than the treatment of wounds in war. It is a puzzle which has exercised the minds of medical men since the world began, and it is still unsolved. And yet the solution is urgent, both out of gratitude to those who risk their lives for their country and also for the sake of the country itself. To attempt with all our strength to solve this puzzle is a matter of common gratitude, for we owe it to those brave men who risk their lives for our safety and well-being to minimise that risk as much as possible; and it is also a matter of national importance, because the more soldiers we save, and the sooner those who are able can be returned to duty, the greater is our strength.

John Hunter himself had some experience of war, and wrote an article on gunshot wounds which is of great interest, especially as regards the influence of the velocity of the bullet on the nature of the wound. There is no definite record in his writings as regards his war service, but Major Howell, of the Royal Army Medical Corps, has collected a few facts concerning it. According to him John Hunter accompanied a British expedition to Belleisle in 1761, in which, in the attempts to land a force on the island, there were some 500 wounded men on whom Hunter was enabled to make his observations. His war experience was somewhat increased in the following year, as he went to Portugal for a few months. His connexion with military surgery did not, however, cease at that time, for he remained intimately connected with the army for many years in that he drew his half-pay regularly. In 1786 he returned to the active list of the army. In 1790 he became head of the Medical Department jointly with a physician, Sir Clifton Waitringham. In 1793, some months before his death, he became sole head of the Medical Department of the Army, and according to Howell he was really the first medical director-general of the army. It is interesting in passing to note, as showing the tendency of his mind, that during his service at Belleisle he studied the coagulation of the blood, and when he came home from his army service he brought with him 200 specimens of beasts, lizards, and snakes, which formed the foundation of his museum. A good many of his views on inflammation and on the treatment of wounds were also formed at that time.

TREATMENT OF WOUNDS IN RECENT WARS.

The history of the treatment of wounds in war would form a very interesting topic, but I shall only say a few words with regard to the treatment in recent wars. During the past all sorts of methods of treatment of wounds, whether in peace or in war, have been employed, but very little real advance was made till the Listerian period, and therefore our present interest in these matters only concerns recent wars.

The first war in which any attempt at Listerism was made was the Franco-Prussian War in 1870–71, but Lister's views had not made any great progress at that time, and the methods employed were very feeble and inefficient. The wounds were sometimes washed out with carbolic lotion, and oily solutions of carbolic acid were also employed as dressings, as well as other antiseptics such as acetate of alumina and permanganate of potash. Open wound treatment was also used in some hospitals, but the results were bad. On the whole, there was no great improvement as regards sepsis on this occasion. The statistics of a number of surgeons in this war give a mortality of 50·5 per cent. for amputations, and of 48·6 per cent. for resections of joints.

In the Russo-Turkish War in 1877 some more definite attempts were made to carry out the Listerian methods; but only the work of one or two individual surgeons is of any use for our purpose. In this war all those surgeons who tried Listerism emphasise the difficulty of getting the wounded for treatment at a sufficiently early period, which was generally laid down as within 12 hours after the injury. I need only refer to the work of Reyher, a Russian surgeon who had visited Lister's wards in Edinburgh, and who attempted to carry out his methods as thoroughly as he could. He also emphasises the difficulty of getting the patients and of carrying out the treatment during the first 12 hours, and therefore he had only a comparatively small number of such patients, whom he terms 'primary antiseptic cases." In his

statistics he stated that his mortality in cases of injuries of joints which came under observation within 12 hours and were treated conservatively was 13 per cent., while in those which were brought in later than 12 hours and in which no thorough disinfection could be made it was 61·5 per cent. As regards compound fractures coming under observation within 12 hours the mortality in primary antiseptic cases was 18·1 per cent., while in those which came under observation later it was 35·3 per cent. The mortality of all the cases treated primarily—that is to say, within 12 hours—including compound injuries of joints, compound fractures, primary resections of bones, and primary amputations, was 6·1 per cent., while that of similar cases which came under observation later than 12 hours was 32·1 per cent. Apart from the delay in getting the patients from the field, the disinfection of each case by the method he employed took some time, and therefore he always took the worst cases first. Reyher's method consisted, in cases of bad wounds of joints, in laying them open, thoroughly washing them out in every direction with 1:20 carbolic acid lotion, free drainage, and antiseptic dressings. In addition, some surgeons — for example, Fischer — recommended that if the wounds were badly soiled these parts should also be treated with strong chloride of zinc lotion.

The next war to which I need refer was the Chino-Japanese War (1894–95), and there also in the Naval Department, which is the only side I know, attempts were made to carry out Listerian treatment. The treatment consisted in washing out the wounds with 2½ to 3 per cent. carbolic lotion, disinfecting the skin, extracting such foreign bodies as were easily accessible, and the application either of antiseptic dressings such as sublimate gauze and carbolic gauze, or of absorbent cotton-wool. As in most cases the wounds could not be thoroughly disinfected in the time at their disposal the surgeons filled them up with iodoform. The result was that nearly all the wounds suppurated, and as an explanation it was pointed out that time did not permit of anything like a thorough disinfection of the wound, and that these wounds were irregularly torn, leaving irregular spaces in which organisms could lie and escape the action of the antiseptic, while the surrounding tissues had lost their resisting power and organisms could multiply readily in them. In this war the average time for the healing of a shell wound was 2½ months.

In the South African War, so far as I know, no thorough attempt was made to disinfect the wounds; indeed, in most cases no special treatment of the wounds was found to be necessary, owing to the fact that for the most part they were small. The majority of these wounds did well if they were allowed to scab over. There were comparatively few large wounds; those which did occur suppurated, and the ordinary troubles which are taking place now were also met with then. It is true, I do not remember to have seen a case of tetanus, but I saw several cases of acute spreading gangrene.

The last great war was the Russo-Japanese War, and by that time antiseptics had been more or less given up, and here we have an example of the so-called aseptic treatment combined with the imperfect use of antiseptics. The wounds were not handled nor washed out with antiseptics, but they were dusted over with a powder of salicylic and boracic acids and dressed with sterilised gauze. The report of the result runs as follows:—

> The wounded, when admitted to hospital, were found to have all their wounds inflamed in a somewhat advanced stage—the bruised tissues were already sloughing off and a reactionary inflammation was already developing around the lips of the wounds. The larger and still open wounds were in most instances covered with a dark grey slough and no signs of firm and red granulations were to be seen.

LESS VIRULENT SEPSIS OF WOUNDS.

If we review these wars we see that, with the single exception of Reyher, no real attempt at the disinfection of wounds has been carried out. Nor has sepsis been conquered; all large wounds suppurate and sometimes slough, and various septic troubles arise. It is true that such septic conditions as phagedæna, pyæmia, &c., with their terrible mortality, are not so frequent as they were before the Listerian era, but otherwise the results are very much the same. In my opinion the explanation of these improved results is as follows. The very bad results in former days were, I have no doubt, due not so much to infection of the wound at the time as to transference of infective material directly from one patient to another by the surgeon and attendants at the dressings. In former days, when the process of infection was not understood, case after case was dressed with the same instruments, which were often not cleaned at all or only rubbed with a cloth or rinsed in water; the surgeons did not even wash their hands after every case. Now we know that if the virulence of a pathogenic organism has diminished during culture the best way of restoring its virulence is by passing it through a series of animals, and further, the virulence of a virulent organism can often be much exalted in the same way. I believe that many of the tragedies in pre-Listerian times arose from the continued transference of increasingly virulent organisms from patient to patient by the surgeon or the attendants. One result of Lister's teaching is that, apart from strict aseptic work (and by that I mean work which ensures asepsis in a wound quite apart from whether antiseptics are used or not), everyone who has to deal with wounds takes care, or ought to take care, by disinfecting the instruments before being used for a fresh patient and avoiding infection of dressings, &c., not to carry organisms from one patient to another. My view is that the chief explanation of the less virulent sepsis which is present in these wounds to-day and to which surgeons point with considerable self-satisfaction, and indeed most that has as yet been gained from modern methods of wound treatment in the case of war, is the result of this simple cleanliness rather than of improved treatment of the wounds themselves.

Before I go any further let me make clear what I mean by sepsis. In speaking of sepsis and septic wounds I refer to the conditions (suppuration, cellulitis, septicæmia, pyæmia, osteomyelitis, and so on) brought about by the ordinary pyogenic organisms. Whether the amount of disturbance caused is much or little, a wound in which these organisms are growing freely is a septic wound. In the present war, I fancy, attention is chiefly concentrated on the foul smell of the wounds and on the occurrence of tetanus and acute spreading gangrene rather than on the suppurative condition. Now, foul smell in a wound does not mean anything much worse than a septic wound without a foul smell. The odour is due to the presence of some organism (generally a

FIG. 1. Iodine Ointment 6 %

FIG. 2. Absolute Alcohol

FIG. 3. Paraform 5 %

FIG. 4. Corrosive Sublimate Paste 0.2 %

FIG. 5. Lysol Paste 20 %

FIG. 6. Carbolic Acid Paste 20 %

To Illustrate Sir W. Watson Cheyne's Hunterian Oration

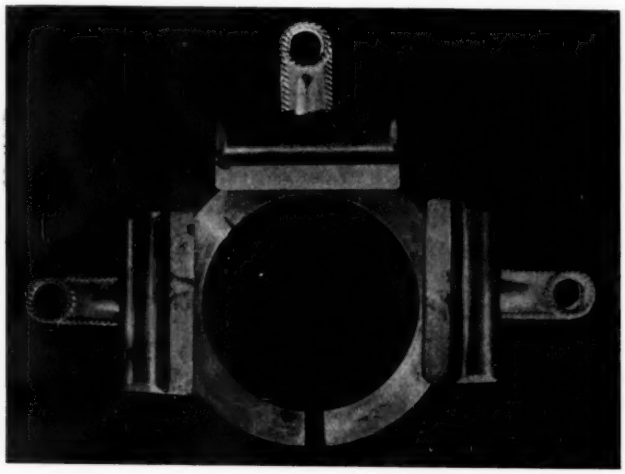

FIG. 7. The Edmunds Cell

FIG. 8. Carbolic Paste—5 % 10 % 15 % 20 % 30 %

saprophyte) which produces foul-smelling gases, and though they may increase the amount of toxins absorbed they are easily got rid of by irrigation, free drainage, &c. Tetanus and acute spreading gangrene, again, are independent diseases which happen to get into the wound along with soil, and are to a certain extent independent of the question of sepsis, although they seldom occur in wounds which are not also septic. Further, these diseases, though very terrible, are comparatively rare.

As regards the present war, I do not suppose we can know accurately what the proportion of tetanus is until statistics are made up at the end of the war; but in a note issued to the medical staff in December it is stated that about 0·2 per cent. of the wounded had been attacked by tetanus among the troops in France, and that some further cases had developed after the arrival of the wounded in this country. In recent wars the number of cases of tetanus has averaged less than 1 per cent. of the wounded (varying from 1·2 to 0·26 per cent.). The proportion of acute spreading gangrene is somewhat greater, but we may take it that at most only some 3 per cent. of the wounded will probably be affected with these diseases. Tetanus and spreading gangrene are very terrible diseases, and hence, no doubt, the reason why undue prominence is being given to them; but what I am trying to work out is how best to deal with the other 97 per cent. of the wounded so as to avoid the much more common and often very serious sepsis. Incidentally I think it will be found that in concurrence with the disappearance of the septic diseases the proportion of cases of tetanus and acute spreading gangrene will also diminish.

CONSIDERATION OF METHODS OF TREATMENT.

Now in considering the prevention and treatment of septic infection of wounds it seems to me that there are theoretically three ways in which we may oppose the attacks of the parasitic invaders: 1. To strengthen the natural protective forces in the body to such an extent that they may be able to resist and destroy the invading organisms. 2. To destroy the organisms after they have broken through the natural defences of the body and have established themselves in the injured part or the body generally. 3. To prevent the growth of or to destroy the organisms at their point of entrance into the body before they have had time to establish themselves there.

The Strengthening of the Natural Defences.

The first point raises the very difficult question of immunity and the action of toxins introduced into the body by the surgeon—the so-called vaccines. These questions are much too abstruse for me to go into to-day, if indeed I were competent to do so, and besides they are very far from being worked out; indeed, the theories of this year may very probably not be the theories of two or three years hence. I may, however, say a few words as a clinician on the way in which the matter so far strikes me in reference to the question under consideration.

In former years the use of vaccines was advocated as a prophylactic measure, a certain amount of immunity being produced, or the existing amount of immunity being increased, by setting up a mild attack of the same or of a closely allied disease. This was the process of inoculation and later of vaccination against small-pox, the latter being produced by setting up a mild attack of a similar disease (if not the same disease), viz., cow-pox, and the value of this measure is universally acknowledged except by a few cranks. The first to extend the process to bacteric diseases was Pasteur, who by the previous injection of organisms, weakened as regards their virulence, was able to induce a considerable amount of protection against the assaults of living and more virulent bacteria of the same kind. Thus he was able to vaccinate chickens against chicken cholera, and sheep and cattle against anthrax. At the present time antityphoid inoculations are being very largely employed and, in the opinion of those best qualified to judge, with great advantage. Prophylactic inoculations have also been employed against cholera and against plague. These attempts to raise the immunity of an animal before infection, and thus to enable it to resist the infection better than one that has not been vaccinated, are thoroughly logical and most promising, and they seem to me to be the proper sphere of vaccine work. It must, however, always be remembered that there is no such thing as absolute immunity and that the increased immunity afforded by the vaccines can always be broken down by a sufficiently large dose of the bacteria.

Of late the attempt has been made on a gigantic scale to employ vaccines not merely as a prophylactic measure, but also in the treatment of disease (these vaccines being composed of the dead bodies of the bacteria with their toxins). This is quite a different principle, however, from that on which vaccines were first introduced, and when it is proposed to rely on this treatment for the recovery of those wounded in war the matter requires very careful consideration. I have always felt rather sceptical as to the possibility of raising the immunity by this plan in cases where the disease is actually in progress. The fact that the disease is present shows that the natural immunity of the body has been more or less overcome, and the general view is that this has been brought about by toxins produced by the invading organisms and absorbed into the system. If this be true, the question very naturally presents itself, How can this immunity be restored by the injection of more toxins of the same kind? I can see no essential difference between the absorption of toxins from a wound and the injection of the same toxins from a bottle. If the quantity absorbed from a wound has broken down the resisting power of the body, how can it be restored by the subsequent injection of more toxins from a flask? I know that bacteriologists try to defend their position, but the arguments put forward in its support are purely theoretical and very obscure.

What support is there from clinical experience in favour of the employment of vaccines for treatment as apart from prophylaxis? Just think how many millions of vaccine injections have been made in the course of the last few years, and in how very few cases we can definitely recognise an immediate and marked improvement, as we ough to do if the treatment is to be justified. Think also, how often we are in doubt whether such improvement as occurs in the course of the treatment is due to the vaccine or is a natural result of the actions of the body. Think again in how many cases (the vast majority, indeed) there is no apparent action at all. I have used vaccines extensively (employing the services of bacteriologists for the

purpose, so that I should not feel that I had not been carrying out the treatment properly), and I have in only two or three cases seen any result which I should not have expected without their use. I have seen lesions getting well in one part of the body and yet, while still under vaccine treatment, fresh lesions breaking out in other parts of the body, and I have also seen bad and even fatal results follow the use of vaccines. To follow out this matter would, however, lead me far from my subject matter to-day, and all I would say as regards the place of the first method in the case of wounds in war is that while I would welcome vaccine injections as a prophylactic measure, I think they are very broken reeds to trust to once the organisms have established themselves in wounds.

Destruction of Organisms in the Body.

Let me now refer very shortly to the second point, of which the chief outcome is chemotherapy, the principle of which is to destroy the organisms by drugs after they have established themselves in the body.

Intermediate between (1) and (2) we have the use of antitoxic sera. Here antitoxins are introduced into the blood which destroy or neutralise the toxins of the bacteria, and the latter, when deprived of their weapons, soon fall an easy prey to the defensive arrangements of the body. The typical example of this is antidiphtheritic serum, which, if given early enough, leads to very rapid arrest of the disease in a way which is not seen in vaccine therapy. In the case of tetanus the antitetanic serum seems also to be very beneficial in some cases, if used immediately after infection.

As to the direct destruction of bacteria by chemical substances or chemotherapy, we have imperfect examples of this in the treatment of malaria by quinine and of syphilis by mercury, and still more definitely in the treatment of syphilis by salvarsan. Whatever may be the value of salvarsan as regards the complete cure of syphilis the immediate effect is most striking and is evidently the ideal to be sought for in the medical treatment of any infective disease. Unfortunately, this form of treatment has not as yet been extended to the infective diseases with which we are at present concerned. If it were it would solve all our difficulties, and it would not be necessary for us to discuss the brutal methods which I felt it to be my duty to recommend at the meeting of the Medical Society last November[1] and which I am afraid I must again to a certain extent emphasise to-day. I sincerely hope that Professor Ehrlich, who, whatever may be thought of German Kultur in general, is the great pioneer in this work and to whom it would be difficult to find a successor, will still be able to go on with his work and will not be crippled in health or opportunity by this war. I may be prejudiced, but I look on Professor Ehrlich as the greatest medical asset that the world possesses at the present time.

The Disinfection of Wounds.

We are thus left with the only method of dealing with these conditions which we possess at the present time—viz., to attempt to destroy or prevent the growth of the organisms responsible for septic diseases before they have established themselves in the wounds, an attempt which we may speak of shortly as the disinfection of wounds.

[1] THE LANCET, Nov. 21st, 1914, p. 1185.

LISTER'S METHODS.

You may remember that in my paper at the Medical Society last November I traced the history of the disinfection of compound fractures in Lister's work, and I may shortly repeat what I said.

His *first* plan was to introduce impure liquid carbolic acid into the wounds, stir it up with the blood, and leave it there, painting a little of the acid on the surface of the blood clot from time to time. The result of that plan was the complete revolution of surgery; his compound fractures behaved like simple fractures, there was no inflammation, suppuration, or sloughing, and none of the septic diseases such as phagedæna, erysipelas, pyæmia, &c., which were so common in his wards up to that time. What also struck Lister as most extraordinary, and what he was always remarking on, was that tetanus also disappeared, although it had been previously quite common in his wards. He had no idea until many years later that tetanus was an infective disease, but he frequently remarked that suppuration was somehow or other concerned with its onset because he had had no cases since he ceased to have suppuration in his wounds. Had the effect of undiluted carbolic acid been to cause extensive sloughing and to favour the growth of pathogenic bacteria, as some of our workers in laboratories tell us is the case, Lister's experiments would have failed and been abandoned and the revolution in surgery might not even yet have taken place.

The *second* stage, after Lister had given up the use of the undiluted carbolic acids in wounds, was to wash out compound fractures very thoroughly with 1 in 20 carbolic lotion, a catheter being attached to the syringe and passed into all the recesses of the wound, so that no part should escape the action of the antiseptic. It was found, however, that the results were not so uniformly good as in his original method, especially if the wounds were much soiled, and so his *third* plan was, in addition to washing out the wound with 1 in 20 carbolic lotion, to clip away the soiled tissues and apply undiluted carbolic acid to those parts. This is the plan which I have used for years and which has proved very satisfactory. Under the present circumstances in the field, however, I suggested a *fourth* plan—viz., in addition to clipping away the soiled parts, to apply the undiluted carbolic acid to the whole surface of the wound, opening it up if necessary.

My main idea in making this suggestion was in order to ensure that the whole surface of the wound should be subjected to the action of the antiseptic, and that no recesses should escape, as might very easily be the case if the wound were only syringed out. A further idea was that the carbolic acid might, so to speak, "pickle" the tissues and so prevent the growth of micro-organisms in them till such time as the defensive action of the tissues had come fully into play. That the procedure is a severe one and open to several objections I readily admit; the great objection, to my mind, being the risk in the case of large wounds, of absorption of the carbolic acid to a disagreeable and even dangerous extent. At the same time, considering the evils of sepsis, this risk, which is not really very great, is worth taking if no better way can be found. Whether the plan can be modified in the light of the facts which I shall bring before you to-day is a matter which only experience can decide.

DIFFICULTIES IN DISINFECTION OF GUNSHOT WOUNDS.

Some surgeons take a hopeless view of the disinfection of gunshot wounds and think that disinfection is impossible of attainment. That it is quite possible and comparatively easily obtained in accidents in civilian practice is a fact which cannot be denied. Why, then, should gunshot wounds be so hopeless? I think the idea is probably founded on experiments by Lagarde and others carried out a good many years ago. In these experiments it is stated that in gunshot wounds in animals, where the bullet is travelling at high velocity, particles of gunpowder may be driven into the tissues which form the sides of the wound to as great a depth as 17 millimetres and presumably bacteria might also be driven in to the same extent, in which case no amount of syringing out of the wound with antiseptics could affect them. I cannot argue this matter fully here, but I may say that the experiments, so far as I read them, are not convincing and I am not prepared to accept them without fresh and careful repetition.

A further reason given is that the sides of the wound are so deprived of vitality that they must slough. But dead tissue in a wound does not slough if the wound is aseptic; indeed, we constantly put dead substances into wounds, such as ligatures of all kinds, pieces of bone, &c., and they do not separate if they are aseptic. In many accidents in civil practice the tissues are equally badly contused, and yet if disinfected early and thoroughly the wound follows an aseptic course and the bruised tissues do not slough. Sloughing of bruised tissues is due to infection of these tissues. Anyone who followed the course of the bullet wounds in the South African War and remembers how frequently they healed without sloughing or suppuration will, I think, doubt the soundness of the view that gunshot wounds must slough and that bacteria are driven into the tissues to such an extent that sepsis must occur.

A third point which is being urged just now is that almost immediately after infection the infective organisms may be found in the blood of the heart. This may be true as regards guinea-pigs and bacteria which produce general diseases, but I want some further confirmation of it in regard to man and local diseases such as those we are dealing with. Even if it were correct in the case of man that some organisms do find their way from the wound to the heart very quickly, it is not these silly young Cupids that one has to fear in the case of septic wounds; they very quickly suffer the fate of unrequited love. It is the slim old bacteria that establish themselves in the wound, dig themselves in, and then proceed to pour out their toxins, that one has to guard against.

I quite realise, however, that there are many difficulties in carrying out the thorough disinfection of wounds in war, but I cannot believe that disinfection of these wounds is impossible, and I will not believe it till I have tried thoroughly myself and have failed.

In my paper at the Medical Society I especially referred to two great difficulties which stood in the way of any thorough disinfection of the majority of gunshot wounds. The first was the large number of cases which may come under treatment at any one time. Sir Anthony Bowlby has rightly laid great stress on this point in his interesting paper in a recent number of THE LANCET.[3] In November I could only suggest that the cases should be sorted out, and that the compound fractures and joint injuries should be dealt with first and as soon as possible, leaving the others to take their chance as regards disinfection.

The second point which I emphasised was the length of time which might elapse between the receipt of the injury and the patient's arrival at a suitable place where thorough disinfection could be carried out, and the consequent failure of any attempt at disinfection owing to the growth of bacteria in the wound in the interval which elapses between its infliction and the reception of the patient at the dressing station or field hospital. With regard to this point I made one or two tentative suggestions, but they were very feeble, though they showed in what direction my mind was working. I said that we had been trying at Chatham to make soluble bougies or suppositories containing carbolic acid which might be pushed into wounds and delay the sepsis, or that, as an alternative, we might push in swabs soaked in iodine and leave them there; but I made no definite suggestion, for the simple reason that I had not worked it out and had no definite facts to go upon.

COMMITTEE OF INVESTIGATION: NATURE OF THE PROBLEM.

I have, however, taken up this problem very seriously since that meeting, and at the suggestion of Sir Arthur May, the Director-General of the Naval Medical Service, have formed a little committee consisting of Fleet-Surgeon Bassett-Smith, the well-known bacteriologist in the Naval Medical Service, Mr. Arthur Edmunds, who has worked with me for years, and who is also attached to the Royal Naval Hospital, Chatham, and myself. I may say that I have been most fortunate in the choice of my coadjutors; they are both men with great scientific knowledge, most industrious, and most ingenious. As far as I am concerned, it has been a great delight to me to go back to laboratory work and experiment again. The work has been done under the auspices of the Naval Medical Service, and the Director-General has given us every assistance that we wanted. It was done partly in the laboratory of the Royal Naval Hospital, Chatham, and partly in Dr. Bassett-Smith's laboratory at the Royal Naval College, Greenwich. We have to thank Sir Arthur May and also the staff at the Chatham Hospital for their most cordial help, and especially Staff-Surgeon Dudley, who has charge of the laboratory there. To-day I propose, with the consent of the Director-General and of my colleagues, to make a preliminary communication on our work, and to mention some of our experiments, and I hope you will remember that though *I* speak, what I say is the result of our joint work and not of my own alone. The more detailed report of the work, which is by no means completed as yet, will be published in the next number of the *Naval Medical Journal*.

The problem which we set ourselves was whether it was possible to introduce an antiseptic into a wound soon after its infliction which would remain there, diffuse in the blood and tissues, and inhibit the growth of the bacteria till such time as the wound could be thoroughly disinfected.

I think I can make the meaning of the problem clear if I give you an illustration, and as we are dealing with war I shall make it a warlike one. The enemy has established a battery at a certain point not accurately known, but evidently in connexion

[3] THE LANCET, Dec. 19th, 1914, p. 1427.

with a definite field or wood; that battery is inflicting, or is likely to inflict, great damage on our forces, and we must try to destroy it if possible. Our gunners proceed to throw shells over the suspected area, searching it thoroughly from side to side and from front to back; but it may quite well happen that they may plough up the whole field without injuring the battery or the gunners at all, because the latter are hidden away in some quarry or ditch and thus escape the shells. Just in the same way, we may syringe out a wound with antiseptic lotions without rooting out the bacteria, for they may be lying safely protected by a piece of bone or tissue or blood clot, and that is the reason why I advised opening up the wounds if necessary and applying the antiseptic methodically to the whole surface of the wound. And just as a field may be spoilt uselessly by the guns, so the syringing may damage the tissues without accomplishing its object, and may only enable the bacteria to get a firmer hold.

Now I suppose we all dream about various things at times—at any rate, I know that I do—and I have often thought that if I were writing a sixpenny romance on war I would make our gunners use shells containing some anæsthetic substance heavier than air which would diffuse along the ground and search out and anæsthetise the enemy, however well they were hidden. They and their guns could then be carted away at leisure. How furious it would make my noble and illustrious namesake if he found that his best troops were carted off the field and woke up to find themselves prisoners of war without a scratch on them!

Now I think that something of this kind would be the best way of attacking the bacteria in these wounds—that is to say, instead of syringing out the wound, which if done in a hurry or incompletely is futile—to introduce an antiseptic into the wound and leave it there to diffuse over the whole wound and inhibit the growth of the bacteria till the patient can be brought to the field hospital. It was with that idea in my mind that I spoke of bougies or iodine in November, and that is the problem which we set ourselves to solve.

ACCOUNT OF INVESTIGATIONS.

In working out this problem we had to consider various points. For example, we had to devise a method of estimating the diffusibility of antiseptics in blood clot and their action on the bacteria present in or on that clot. We soon found that their diffusibility and activity varied much according to the medium in which they were present and various other circumstances.

This led us to the question of the form in which the antiseptics should be used in wounds, and we then had to test the action of a variety of antiseptics in various media so as to find one suitable for our purpose.

Again, we had to study in what strengths these antiseptics could be introduced into and left in wounds, and further, we had, as far as possible, to test the action of the antiseptics which seemed most suitable for our purpose, in animals and in man. This last part of our research is still very incomplete, but we have learned a good deal about antiseptics which we did not know before, and therefore I hope this short preliminary communication on our work will not be without interest to you. At the same time, I wish you to understand thoroughly that it is really preliminary. All sorts of lines of research are still occurring to us, and I would not say anything about it just now were it not that the matter is very urgent and that we have arrived at a point when it is necessary to test our results on actual wounds. Further, we shall no doubt have the benefit of various criticisms.

Media and Antiseptics.

I may, in the first instance, refer to the medium in which the antiseptics should be introduced into wounds in order to delay the growth of bacteria till the wound can be properly attended to. An essential point is that the antiseptic should remain in the wound and not escape from it at once; it is not a transitory action but a more or less continued one that is required. Hence it seems evident that antiseptics in a fluid form will not answer the purpose, for they will run out of the wound almost at once, and their effect will only be momentary. For this reason, therefore, watery, alcoholic, or oily antiseptic solutions were discarded, however efficient they might be from an antiseptic point of view. This left us with various pastes or ointments, and powders. As regards the latter, it would be very difficult to introduce powders into the recesses of a wound, and besides some of the most efficient antiseptics do not occur in the form of powder. Hence we chose pastes, and we have made a large number of experiments with the view of deciding what would be the most suitable basis with which to combine the antiseptic. I will show you presently an example of the behaviour of antiseptics according to the bases with which they are combined, and will make some remarks on this point, but in the meantime I may say that, as far as we can judge at present, the most suitable basis from every point of view is one consisting of six parts of lanoline to one part of white wax. I may say that in the preparations which I shall now show you in reference to the question of diffusibility of antiseptics the latter were combined in varying proportions with this base unless I state the contrary. We have, however, also tested the diffusibility and activity of several antiseptics in liquid or solid form.

The following were the chief substances tested: Carbolic acid. Tricresol (o.m.p. cresol, as Martindale labels it). This consists of the three cresols—ortho-, meta-, and para-cresol—which have very nearly the same boiling point and pass over together in the distillation of coal-tar products. Various proprietary substances which are used by surgeons in which the tricresols or allied substances form the active agents, but are mixed with other products of distillation and with varying quantities of soap so as to form an emulsion. Such were izal, cyllin, hycol, and lysol. Liquor cresolis saponatus (or English lysol made with pure redistilled tricresol, Martindale). Bichloride of mercury. Iodine. Salicylic acid. Salicylic and boric acids (1 to 3), a powder much used in the Russo-Japanese War. The double cyanide of mercury and zinc. Paraform. Turpentine. Various essential oils, especially oil of origanum, oil of cinnamon, and oil of eucalyptus. Alcohol. Various colloidal substances (mercury, silver, gold, selenium). Balsam of Peru, friar's balsam, and Dr. Mencière's embalming fluid.

We have tested their diffusibility and inhibitory power as regards growth, and also the antiseptic power (i.e., the power of actually killing the bacteria) in blood clot and also on nutrient agar. As a matter of fact, we find that the diffusibility and antibacteric power of most of these pastes are much the same in nutrient agar as in blood clot, and for

demonstration purposes agar is far more convenient. Hence, on the present occasion, I shall show you some of our agar preparations.

Description of Methods.

Speaking generally, the plan which we have ultimately adopted as regards agar, is to place the antiseptic paste to be tested on the bottom of a Petri dish underneath a slab of nutrient agar and to paint the upper surface of the agar with an emulsion of bacteria of various kinds according to circumstances. We were then able to judge of the diffusibility and activity of the antiseptic by observing the growth or absence of growth of the bacteria which we had planted. Now a comparative test is only of value if all the conditions are exactly the same, and I think we have ultimately worked out a satisfactory method. We always use the same quantity of the paste by weight, either half a gramme or one gramme as we wish. This is placed on an ordinary microscopical cover-glass, either ¾ or 1 inch in diameter, which is applied to the centre of the under surface of the slab of agar. In this way the antiseptic is applied to the same definite area (¾ or 1 inch) of the agar in all cases. Where fluids have been tested they have been put into a small paraffin cell containing pieces of filter paper and always in definite quantities.

The slabs of agar must also always be of exactly the same thickness, and here we had our greatest difficulty. We began by pouring the agar into a Petri dish, till, as far as we could judge, we had got the proper depth of agar, and then allowed it to solidify and turned it out into another Petri dish in the centre of which the paste was laid. After all, however, this was only guesswork; the table might not be level and one side of the agar might be thicker than another, and besides we could not always be certain that we had put the same amount of agar into each dish. This difficulty has been overcome in a very ingenious manner, and though when two or more men work together it is not usual to refer to any one man's share in particular, still in this instance the arrangement is likely to be very useful in similar experiments in future, and therefore I think I ought to say that it was devised by Mr. Edmunds, and I shall speak of it as Edmunds's cell. (Fig. 7.)

To make an Edmunds's cell you take two square pieces of glass, a brass ring of known thickness (we generally have used one ¼ inch thick), the ring being incomplete in one part, and two or three broad paper clips. First sterilise a glass plate in the flame and then lay it down on a dish, then similarly flame the interior of the brass ring and lay it down on the glass, then flame the other piece of glass and lay it over the brass. Bind these together by the paper clips and you have a cell with an opening at one part through which the melted agar can be poured and left to solidify. When the agar has solidified the cell is laid down flat, the clips removed, the upper glass plate and the brass ring lifted off, and then we have the slab of agar lying on the lower glass plate. The cover-glass with the paste is now placed on the centre of this slab, with the paste next the agar, and then the lower part of a Petri dish is inverted over it, the whole turned upside down, and with a little manipulation the slab is transferred to the dish. A thin emulsion of the bacteria to be employed is previously made and is now brushed over the whole surface of the agar with a camel's hair brush. Finally, a little fluid agar is run round the edge of the slab, partly to fix it to the dish and partly to prevent the escape of vapour should the antiseptic to be tested be volatile.

As regards bacteria, we have chiefly employed the ordinary pus organisms, the staphylococcus pyogenes aureus, but we have used micrococcus prodigiosus and also bacillus subtilis so as to study the effect on spores. It will be very interesting when we have time to study other organisms. The Petri dish thus prepared is placed in an incubator at the body temperature and observations made from time to time.

Results of Experiments.

I shall now show you some of the results, and first we will take a series in which the surface of the agar was brushed over with an emulsion of staphylococcus pyogenes aureus, which will show you the effect of various antiseptics on the growth of these organisms, the antiseptics being incorporated in the lanoline and wax base.

The first specimen which I show is a control where everything has been done as I have said, except that no paste has been applied, and you will see that the whole surface of the agar is pretty uniformly dotted with colonies of the staphylococci. (Fig. 2.)

As a marked contrast with this I show you next a plate where a paste containing 30 per cent. of cresol has been used, and you will see the large clear area in the centre where no growth has occurred and the very narrow fringe of small colonies around the edge of the agar. The central space is clear because no bacteria have grown there, and the extent of the clear space indicates the diffusibility and the activity of the various antiseptics when present in this particular basis (lanoline and wax). I shall have a good deal to say presently about the significance of this clear space and also about carbolic acid and tricresol, and I shall therefore leave this and the allied antiseptics to the last and show you, in the first instance, the action of various other antiseptics. I may, however, show you a series of the carbolic acid specimens from 5 per cent. up to 30 per cent. (Fig. 8) so as to illustrate the value of the method, and you will see that as the strength increases so the effect in arresting the growth also increases. In this series only half a gramme of the paste has been used so as to show the contrast of the various strengths better, but in the specimens which follow the amount has been one gramme.

Iodine.

In the meantime I shall pass on to other antiseptics, and in the first place I show you various specimens of the effect of iodine, which is so popular at the present time. I here show you plates where the paste contained 2 per cent. and 6 per cent. of iodine. (Fig. 1.) There was no use in going higher because even these pastes cause marked irritation of the skin, and when we reach 10 per cent. the paste left on only for 2½ hours caused almost complete destruction of the skin, so that iodine of that strength is clearly unsuitable as an application in wounds. Here you see that the iodine has not diffused at all, and that luxurious growth has occurred over the whole area just as in the control dish. I would especially call your attention to the plate where 6 per cent. iodine paste has been used, where you see that the growth is actually more luxuriant over the iodine than elsewhere. At first sight you might think that the organisms painted over the surface had run down and collected in the middle of the slab, but as a matter of fact the centre of these slabs of agar is the highest point on account of the cover-glass and ointment placed behind them. In these specimens the solid iodine has been mixed up with the lanoline and wax basis, and that might be the reason for its failure, and therefore we have gone further into the matter.

In the next plate which I show the iodine was mixed with iodide of potash in the ordinary proportions so as to aid its solution, but here also there is still no action. Again I show you a specimen where the ordinary tincture of iodine of the British Pharmacopœia has been used without any ointment basis, pieces of filter paper being saturated with the tincture and applied in the same manner as the paste, but still no growth has occurred.

I must say that these results have surprised me very much, as I was always under the impression that iodine was quite a useful antiseptic, though I

knew that it was not so good as was generally supposed. However that may be, it certainly does not show the diffusibility and activity which many other substances do, and I am afraid that we must therefore come to the conclusion that iodine is useless for our purpose. Certainly the clinical results in wounds in war, so far as they have come under my notice, coincide with these experimental results, for I have had several very septic cases which I have been surprised to learn afterwards had been freely treated with iodine soon after their infliction and shortly before I saw them.

Alcohol (on Filter Paper).

Some disbelievers in iodine have, I understand, expressed the opinion that any good effect of the iodine solution was due to the alcohol, but I show you here a plate where absolute alcohol has been used and where uninterrupted growth has gone on. (Fig. 2.) This is interesting, because it is not uncommon to see needles, &c., especially hypodermic needles, "disinfected" with methylated spirit.

Other Antiseptics Tested.

Paraform, 5 per cent. in paste (Fig. 3).—Here the result is good; there is a clear area beyond the cover-glass of 2/5 to 3/5 inch in extent. Immediately outside this area the colonies are large. As you will note, this is a small percentage of paraform, but I doubt if anything stronger could be employed in a wound, if indeed this percentage would not be too strong.

Double cyanide of mercury and zinc, 10 per cent. in paste.—This shows no action. Dry cyanide powder placed under an agar slab also causes no inhibitory effect, but if the powder is moistened with a little water, as was done in this next specimen, the inhibitory effect is very marked. I confess that I do not as yet understand this, but we are going into the matter. It is possible that there may be some dissociation of the double cyanide, but we shall see. In the meantime, however, I would warn those who wish to use the double cyanide in wounds that they must not put it into a lead tube, for the lead is rapidly attacked and cyanide of lead is formed which is poisonous.

Bichloride of mercury—(Fig. 4) 0·2 per cent. in paste (= 1 in 500). Here we see a clear area beyond the cover-glass varying from 1/8 to 1/4 inch. Note that the colonies are large up to the edge of the clear area.

In the following specimens the antiseptic was combined with the lanoline and wax paste in the proportion of 20 per cent.

Salicylic acid.—Over the area of the cover-glass the surface is fairly clear, but shows scattered colonies. Free growth extends quite up to the cover-glass.

Japanese powder (Salicylic acid 5, boric acid 15, lanoline and wax base 80).—This plate shows very little inhibitory action, no doubt because the percentage of salicylic acid is too small and the boric acid is inert.

Oil of turpentine.—Free growth, no inhibitory action.

Oil of origanum.—The centre is clear, but in the immediate neighbourhood colonies are dotted all over, but it is comparatively clear for about 1/2 inch. Free growth beyond.

Oil of cinnamon.—Very good, 3/5 to 4/5 inch clear area outside the area of the cover-glass.

Oil of eucalyptus.—No interference with growth.

Izal.—Colonies right up to and overlapping the area of the cover-glass.

Cyllin.—Somewhat larger clear area, but separate colonies are found right up to and overlapping the area of the cover-glass.

Hycol.—Better. Comparatively clear for about 3/16 inch from the cover-glass, but scattered colonies to within 1/8 inch of the centre.

Lysol.—Clear area about 1/4 inch beyond the cover-glass.

British Lysol (Fig. 5).—(Liq. cresol. saponat.—Martindale). 20 per cent. paste. Large clear area; quite good.

Friar's balsam (*pure*).—Free growth. No inhibition.

Balsam of Peru (*pure*).—Clear circle 3/8 inch beyond centre.

Dr. Menière's embalming solution (*pure*).—Free growth. No inhibition.

Colloidal mercury, selenium, copper, and silver.—No inhibitory effect.

We may now pass on to *carbolic acid and tricresol*. I have already shown you a series of dilutions of carbolic acid in small quantities, but I may now show you a 20 per cent. paste of carbolic acid (Fig. 6) where one gramme has been used, and then a 30 per cent. one. I may also show you a similar series with tricresol. You see that the results are practically the same with tricresol as with carbolic acid, and they are quite constant.

Significance of Clear Area.

Let us now study these preparations a little more carefully, and especially the meaning of this clear space. In the first place, it indicates that no growth has occurred in that area, and not only so, but that there never has been any growth, or at any rate not since a very short time after the preparation of the slide. In other words, the antiseptic has been able to diffuse so rapidly that it has checked the growth of the bacteria which were sown on the surface before they had formed colonies visible to the naked eye or even under a low power of the microscope. If one examines such a plate under a low power of the microscope, say with a 2-inch lens, 3 hours after inoculation, one can already see the colonies quite distinctly towards the periphery of the agar, but none can be detected towards the centre, in the area which will subsequently remain clear. In rather less than 5 hours after the preparation of the plate the colonies can be perceived with the naked eye. This will give you some idea of the extraordinary rapidity with which these organisms grow. From this we learn that at some period of time within 3 hours after the preparation of the plate, and probably a good deal less than that, the antiseptic has penetrated through ¼ inch of solid agar in sufficient amount to arrest the growth of the bacteria; indeed, seeing the extent of the clear area, it must have penetrated to a greater distance than ¼ inch. Thus you see the value of this clear space as an index of the diffusibility and activity of an antiseptic, and from the series of specimens already shown you see how differently the various substances which we have tested act.

There is another point which I wish you to note in this preparation (the carbolic acid or cresol plate)—viz., that the colonies at the edge of the clear area are quite small and that they increase in size as they lie further away from it. From this it is clear that the antiseptic did not cease to penetrate at the end of two or three hours. It is true, it only got through in amount sufficient to check growth before colonies had formed in the area shown by the clear space, but it continued to come through to a greater and greater distance, and as it came through it arrested the growth of colonies which had already become visible. All antiseptics, however, do not act in this way. Contrast the appearance of the paraform slide and several of the others which I have already shown. There you will see that the colonies at the edge of the clear centre are large—indeed, sometimes as large as any outside, showing that there was no continuance of the diffusion of the antiseptic; evidently the full amount came through quickly and the full effect was obtained in the first three hours. The continuance of the diffusion is a very important point and one in favour of

cresol and carbolic acid. I think we may therefore conclude that when carbolic acid or cresol is combined with this base a certain amount is stored up and only parted with slowly, whereas in other cases there is no such storing up, the antiseptic passing through quickly and exercising its full effect at once. We are inclined to think that it is the wax to a greater extent than the lanoline which holds up the carbolic acid, because the clear area is larger where the basis is lanoline alone than with the lanoline + wax base. I shall, however, show you immediately a series illustrating the effect of different bases, and you can note this point.

Evidence of Death of Bacteria.

Now another question naturally arises in looking at these barren areas. Are the bacteria, which are planted on the surface, still alive, or have they been actually killed, and, if so, how soon are they killed? You will always find that in cases where 20 per cent. or more carbolic acid or cresol is employed, if you make a cultivation from the centre of the plate over the cover-glass area 24 hours after the commencement of the experiment, no growth takes place, showing that the bacteria have died. We have spent a good deal of time in going into this matter.

In order to ascertain precisely what happens we have drawn a series of circles, ¼ inch apart, on a piece of paper. These circles have been numbered from the centre, 1, 2, 3, &c. The Petri dish is placed on this paper so that the centre of the cover-glass is over the centre of the circles. The 1-inch cover-glass occupies circles 1 and 2, and then we have the further circles 3, 4, 5, and 6 at ¼-inch intervals from the edge of the cover-glass. At certain definite intervals of time cultivations have been made from the centre and from various circles around with the following results.

During the first three hours there is no evidence of death of the bacteria even at the centre, so that the absence of growth up to that time is purely an inhibitory effect. After that time one begins to get evidence of the death of the bacteria, in the first instance in the centre, then in No. 3 and No. 4. Here I show a specimen at the end of five hours, where you see that the growth from the centre is only slight, in No. 3 moderately luxuriant, and in No. 4 quite active. Next I show you a specimen from the same experiment 9½ hours after its commencement. Here there are very few small colonies at the centre, a marked diminution in No. 3, and normal growth at Nos. 4 and 5. We have generally found that the central area is sterile after six to ten hours, and No. 3 becomes sterile next day and sometimes also No. 4. In one case cultures were taken 6 days after 30 per cent. cresol ointment had been applied, with the result that the centre, No. 3, and No. 4 were sterile. The line between Nos. 4 and 5 also appeared to be sterile at first, but after three days a few colonies appeared in the tube inoculated from that point. Note that the areas 4 and 5 show visible colonies, so that most of them had also died, and the few bacteria which survived had so suffered in health that it took three days before they had recovered sufficiently to grow. It is interesting to note that a cultivation taken from the centre of the 6 per cent. iodine plate three days after the experiment began grew luxuriantly. We have not had time as yet to test this point with other antiseptics or other bacteria, but it will be very interesting to do so.

One other point arises in connexion with these clear areas. Is the hindrance to growth permanent or does the antiseptic ultimately disappear? Cresol and carbolic acid are both volatile, and it was interesting to see whether a time would come when the medium could again be inoculated with success. To test this we have taken dishes where carbolic acid, cresol, and formalin have been used, and after 21 days we have inoculated the clear space with fresh bacteria, but no growth occurred.

Effects of Different Bases.

I have already said that the results differ considerably according to the base with which the antiseptic is combined. We have made many experiments on this matter with which I need not trouble you, but I show you here a series of 20 per cent. carbolic pastes in five different bases. You will see that the greatest diffusion is obtained with pure lanoline and the least with a paraffin base, the latter being only half as great as the former. The lanoline when mixed with carbolic acid is, however, too diffluent, and besides, it is much more pungent and would irritate the wound and the skin. The addition of wax to it lessens its activity by about one-quarter, but it does not irritate the skin and only requires the introduction of a little more into the wound to obtain the same effect. The greatest diffusion in the carbolic series is obtained with undiluted carbolic acid and the same is the case with cresol.

Imitation of Conditions of a Wound in War.

We have also tried in various ways to reproduce the conditions of a wound in war as far as possible. I may show two experiments.

Take a flattened flask (this was done as it shows better in the epidiascope than an ordinary one), introduce into it nutrient agar with which staphylococci have been thoroughly mixed. When it has set, punch a channel down it and introduce down that channel a piece of gauze or lint which has been soaked in the cultivation of bacteria. Then, by means of a syringe or pipette, put small quantities of cresol or of carbolic ointment into the agar in various directions and place the flask in the incubator.

As you will see in this experiment done five weeks ago and in which 30 per cent. cresol ointment was used no growth has taken place anywhere, while the control vessel shows active growth.

I also show you two similar vessels of gelatin done on Jan. 20th in which micrococcus prodigiosus was used and a piece of ordinary lint which was lying about the laboratory was put in and in the one in which 20 per cent. carbolic paste was used you see no growth. (We have since repeated the experiment with a massive blood clot and precisely the same result has been obtained.)

Spore-bearing Bacilli.

So far I have been speaking of experiments with non-spore-bearing bacteria, and especially with staphylococcus pyogenes aureus, but before I leave this part of the subject I may mention that we have also tried similar experiments with the spores of bacillus subtilis, and I show you one with 20 per cent. carbolic paste which shows a clear area as in the experiments with staphylococci. Tests have been made as to the vitality of the spores; for example, cultivations were taken from the centre, from space No. 3 and from space No. 4, 12½ hours after the commencement of the experiment. On the following day there was no growth from the centre, but there was growth from No. 3 to a certain extent and quite copiously from No. 4. After a further 24 hours in the incubator there was still

no growth from the centre, but on the third day slight growth was evident which presently became quite copious. Apparently, though the spores had not been killed, they had been damaged, and took some time to recover their natural activity. We have not yet had time to pursue this matter so far as with staphylococci, but some interesting points as to the action on spores have been observed and are worth following up.

Scope of Investigations.

So much for a short sketch of our experiments with agar. I hope you understand thoroughly what their scope is. This is not a method to test whether a particular antiseptic will or will not kill bacteria, or in what concentration or after what length of time it will do so. For that you have the Rideal-Walker and various other methods, but these only deal with naked bacteria with which the antiseptic comes into immediate contact. The method which I have now shown you is, I think, a far more practical one because it enables us to study the action on bacteria at a distance and in different surroundings, as we have to do in connexion with the treatment of wounds. This method, which I believe is new, opens up quite a fresh line of study, and I fancy that, in following up the points raised by it, we shall have enough to occupy all our spare time while this war lasts. And it is quite possible that we may come across some better antiseptics or some better method of applying them in the course of our study.

The explanation of the diffusion is partly osmotic pressure and probably partly volatility of the antiseptic. Another thing also happens which affects diffusibility—viz., combination of the antiseptic with substances in the surrounding medium. This is probably the explanation of the result with iodine, which, though an active antiseptic when free in the presence of naked bacteria, has a marked tendency to combine with a great variety of substances which diminish or destroy its antiseptic qualities. Hence the reason why it does not diffuse, as an antiseptic, in blood and agar. (We have since found that one iodine plate prepared as above and covered with starch paper shows no starch reaction after 24 hours.)

Experiments on Blood.

Although I have been showing you agar experiments, we have done a number of similar experiments with blood clot—indeed, all our earlier work was with blood. In most of our experiments the blood was received into a long cylindrical vessel and allowed to clot. The clot is then turned out into dishes and cut in slices about half an inch thick, like a Swiss roll, and treated in the same way as I have already mentioned. In some cases a very thin layer of agar has been run over the surface of the clot, so that the colonies of the bacteria can be more readily seen than in the clot itself. I need not take up your time by narrating the experiments, but the results so far as we have gone are very much the same; certainly they are quite the same with the carbolic and cresol pastes and with iodine. The arrest of the growth of the bacteria and their subsequent death occur in blood clot as in agar, and the clot, where it is penetrated by the antiseptic, becomes firm and hard and unsuitable for the growth of bacteria. If a thick mass of blood clot is placed in a beaker and the carbolic or cresol pastes mixed up with it it becomes a solid mass, and bacteria do not grow in it. A somewhat similar effect is produced by mixing blood with the double cyanide of mercury and zinc powder, but in one case which was tested micrococci were growing on the surface. Iodine in the form of a 6 per cent. paste does not check the growth of organisms in blood at all.

EXPERIMENTS ON ANIMALS.

We have not done much in the way of experiments on animals, because it was necessary to become pretty thoroughly acquainted in the first place with the general behaviour of antiseptics as regards diffusibility and activity, and that has taken up most of the time at our disposal. We have, however, done some experiments and can now take up the matter more systematically.

It is by no means easy to devise suitable experiments on animals, especially on guinea-pigs, which up to the present were the only animals at our disposal; and further, we have not, so far, got a very virulent organism which produces local suppuration in guinea-pigs without at the same time, in most cases, also setting up a general septicæmic disease. Guinea-pigs also have no subcutaneous tissue, so that the skin has to be raised so as to introduce the infective material, and when the wound is closed this material flows into the tissues beyond the region of the wound; in fact, it is practically a subcutaneous injection; or if a fluid is used, it runs out over the skin and may reinfect the wound at a later period. We shall, however, manage to overcome these difficulties.

The best organism that we have tried as yet is the bacillus pyocyaneus, which sets up suppuration and sloughing locally, but at the same time is very apt to get into and grow in the blood. We have, however, got some results with this organism which indicate that we are working in the right direction. To take one series, pieces of lint soaked in a virulent emulsion of bacillus pyocyaneus were introduced into subcutaneous pockets in seven guinea-pigs:—

(*a*) Control. The inoculation was followed by severe suppuration; the animal rapidly lost weight and was killed in seven days. Bacillus pyocyaneus was present in the wound.

(*b*) Tricresol paste (30 per cent.) was introduced into the wound *immediately* after infection. No suppuration for four days, and the animal gained weight; then began to lose weight and slight suppuration occurred. Wound opened and cleaned out, and lint removed; rapidly got well. Bacillus pyocyaneus found in the wound.

(*c*) Carbolic acid paste (30 per cent.) introduced *immediately* after infection. Same result as in (*b*), but no bacillus pyocyaneus found.

(*d*) Tricresol paste (30 per cent.) introduced *15 minutes* after infection. Almost continuous gain in weight; no suppuration for four days. Recovered. Bacillus pyocyaneus not found in wound.

(*e*) Carbolic acid paste (30 per cent.) introduced *15 minutes* after infection. Gain in weight and no suppuration for four days; then slight suppuration, but no bacillus pyocyaneus found. Recovery.

(*f*) Tricresol paste (30 per cent.) introduced *half an hour* after infection. Rapid loss of weight, suppuration, and necrosis. Animal killed. Bacillus pyocyaneus found.

(*g*) Carbolic acid paste (30 per cent.) introduced *half an hour* after infection. Rapid loss of weight, suppuration, and necrosis. Animal killed. Bacillus pyocyaneus found.

As regards tetanus and spreading gangrene, somewhat similar experiments have been performed with some highly infected earth which Dr. Bassett-Smith was able to produce through the courtesy of Dr. Dudgeon, of St. Thomas's Hospital.

The control animal died in three days from spreading gangrene, and bacillus aerogenes capsulatus was present in large numbers. The others died from tetanus from the third to the seventh day, but there was no gangrene, though both tetanus bacilli and the bacillus aerogenes capsulatus were present.

These experiments are being continued, but so far it seems as if the 30 per cent. pastes carbolic acid and tricresol prevented suppuration (B. pyocyaneus) for four days at least, longer than we required, while although tetanus appeared to be unaffected the action of the gangrene-producing organism was apparently checked. By the additional use of antitetanic serum it seems that the occurrence of tetanus may also be prevented. In no case was there any acceleration of the infection by the treatment. Further experiments will be reported later.

OBSERVATIONS ON MAN.

Looking over the specimens that I have shown you it will be seen that there are several antiseptics which evidently have considerable value from the diffusion point of view and which it might be worth while investigating in the case of wounds in war. Such are carbolic acid, tricresol, lysol, corrosive sublimate, paraform, oil of cinnamon, double cyanide of mercury and zinc, salicylic acid, and balsam of Peru. Of these, in all probability, paraform would be too irritating, while if much corrosive sublimate were left in a wound it might be absorbed in serious amount; they might, however, be of use for later dressings. It is clear, however, that the whole subject must be carefully worked out at the front. In the meantime, taking everything into consideration, it seems, so far as we have gone, that tricresol or carbolic pastes should be tried first in the strength of 20 per cent.

In connexion with the use of these pastes in wounds we tested their effect on the skin, and as Mr. Edmunds has a delicate skin and a considerable expanse of it, he was deputed to wear the various pastes for 24 or 48 hours. The 20 per cent. carbolic or cresol pastes did not cause any redness or irritation of the skin, but greater strengths left a reddish area, and it was evident that any greater strength would probably prove unsuitable. The cresol paste also seemed more irritating than the carbolic acid. We also tried various iodine pastes; the 2, 4, and 6 per cent. pastes caused marked redness and irritation of the skin after 24 hours, and this did not pass away for several days. We could not induce Mr. Edmunds to wear a 10 per cent. iodine paste for more than 2½ hours, and that burned a hole in the skin which took some time to heal. From that experience and from the failure of iodine pastes in the experiments with agar and blood clot it is evident that this antiseptic is of no value for our purpose.

Having decided on the paste, we tried to get some fresh wounds on which to try it. Unfortunately for our purpose, though fortunately otherwise, during the last three weeks there have been no fresh naval wounded at the Chatham Hospital, and hence we have not had the opportunity of testing it on actual war wounds. We have, however, had several cases from which we could form some idea as to the action of the paste in wounds. The following was the first case in which we tried the paste:—

1. The patient was a man who shot himself in the face and head. The bullet entered just in front of the mastoid process and ran upwards and forwards and came out at the inner side of the forehead near the middle line. In its course it broke up the upper jaw and malar bone, leaving a large cavity full of pieces of bone, passed through the eyeball tearing it to tatters, and smashed up the lower and anterior walls of the frontal sinus. The fracture of the frontal bone extended into the nose, where also the dura mater was torn, but there were no cerebral symptoms at first. The remains of the eyeball were removed, and one small, quite loose fragment of bone from the supraorbital region. The 20 per cent. cresol paste was then freely introduced into the whole track and cavity of the wound. The patient lived four days and died of his intracranial injuries, but during that time there was no inflammation, or sloughing, or suppuration from the wounds; they were quite aseptic, and no bacteria could be found in pieces of blood clot examined on the second and third days. On the second day a cultivation was made from the end of the drainage-tube where it projected beyond the wound, and only six colonies of cocci were obtained. Naturally one would have expected some growth from that part, and it is surprising that it was so little. He developed symptoms of meningitis and died on the fourth day. On post-mortem examination suppurative meningitis was found, but there was no suppuration anywhere in the external wound where the paste had been introduced; indeed, although it communicated with the nose and with the tear in the dura mater, the blood clot was lying in it without any decomposition.

I may mention one other case which is also very instructive.

2. The patient had a bad crush of the thumb, practically destroying the vitality of the terminal phalanx and laying open the phalangeal joint. It was a machinery accident and the parts were very much soiled. Carbolic acid paste (20 per cent.) was at once squeezed into the wound and over the dirty skin before his admission to the hospital. When he arrived at the hospital an energetic temporary surgeon proceeded to clean up the wound and thus spoil the observation, but he was caught in time; the parts were dried and more paste was put in. The wound remained quite quiet, no pain, no suppuration, no temperature or constitutional disturbance. We know what a mess such a wound would have been in under ordinary circumstances—stinking, inflamed, swollen, and probably a good deal of constitutional disturbance. At length on the tenth day the surgeon who had charge of the case wanted to see what the condition of the terminal phalanx was, and so he set to work and cleaned out the blood clot and the skin. He found the greater part of the terminal phalanx dead but not smelling, and he applied ordinary dressings. Two or three days later inflammation set in and suppuration spread up along the tendon sheath. He therefore removed the end of the thumb and opened the sheath. My own belief is that had the wound been left alone the infection would not have occurred, the dead tip would have dropped off, and healing would have taken place without any infection. At the same time the result was very remarkable and encouraging.

Four days ago we had an accidental pistol wound of the buttock with fairly large wounds of entrance and exit. Carbolic paste was introduced, and so far there is no sign of inflammation or suppuration.

BEARING OF RESULTS ON TREATMENT OF WOUNDS.

So much for the facts which we have to bring before you. What are the chances of attaining our object? Recall what that object was: to find some means of averting sepsis in a wound for some hours, or at most a day or two, till thorough disinfection can be carried out. Nothing more. Now we have learned from laboratory experiments that quite a number of antiseptic substances are able to penetrate agar and blood clot to a distance of ¼ to ½ inch and still retain sufficient antiseptic power to prevent the growth of organisms, and that this penetration takes place in less than three hours. We have learned in guinea-pigs in the case of the virulent bacillus pyocyaneus—quite a different class of organism in its relation to the guinea-pig from the pyogenic cocci in their relation

to man—that the development of infection can be delayed for four to five days by these pastes provided the paste is put in early, within 15 minutes, and that when the wound is cleaned out at the end of that time healing rapidly occurs. From the first observation on man we learn that after one application of one of these pastes to a wound which has not been badly infected no signs of infection have occurred in that region for four days. From the second observation we find that no suppuration or other sign of infection occurred for ten days, although a great part of the tissue bordering on the wound was actually dead, and this was a much dirtier wound than the other.

I cannot but think that these facts point to the possibility that this part of the puzzle as regards the treatment of wounds in war can be solved satisfactorily, and that the danger caused by the delay in getting the cases to a place where proper attention can be given to the wounds can be reduced if not entirely removed.

I think the stage has now been reached when the matter must be worked out more thoroughly on man, and this can only be done at the front. I am afraid I shall not have the opportunity of doing so myself, unless there were a naval action in the Channel. So far, where the actions have been farther north, we have only got the wounded at Chatham a day or two after the injury. Indeed, the only way of getting at the naval cases at an early stage would be to go on board a destroyer or cruiser, but I confess I do not fancy knocking about the North Sea in a destroyer on the off-chance of having a scrap with the Germans. I hope, however, that the plan will be tried by those on board ship, and also by the army at the front. I need hardly say that we shall be only too pleased to show our work and impart our ideas to anyone who is going to work at this subject at the present.

I cannot help thinking, though it is perhaps only a hope, that by this plan we may attain more than a temporary arrest of sepsis, that in some cases we may even attain complete disinfection of a wound, rendering further measures unnecessary, but this, again, can only be worked out at the front. I doubt, however, if these problems will be solved by haphazard work of individual surgeons. Had I the authority I would set aside a small section of the front line with its own line of communications and its base hospital for the thorough study of the whole problem, and appoint a committee of a few men to investigate the subject and to follow up the cases. I say a small section of the front, because one would not want to be overwhelmed with wounded. I need hardly hint that if such a committee were appointed I should like to be one of the members.

CONCLUSION.

I must apologise to you for having taken up so much of your time to-day, but the subject of the treatment of wounds in war is one which has been a hopeless puzzle for centuries, and anything which can in any way, however slight, help to solve that puzzle is well worth the closest consideration. I have also to apologise for having brought you here to-day to hear a Hunterian oration and yet not giving you any oratory or saying anything about Hunter's work, but I am sure that if he had been alive to-day he would have been just as anxious to solve this puzzle as any of us are.

COLLOIDAL IODINE ASSOCIATED WITH SERUM TREATMENT IN TETANUS.

BY DR. AUREGAN,
HEAD SURGEON OF THE HOSPITAL AT LANNION, FRANCE.

HAVING been placed in charge of the special tetanus department of a supplementary hospital containing 1100 beds, I had the opportunity of treating 23 cases of tetanus between September and December, 1914. At first I employed intraspinal injections of antitetanic serum in repeated doses; with this treatment the number of deaths preponderated over that of the recoveries. On the other hand, apart from tetanus cases, I employed colloidal iodine in my surgical department (250 beds) as a dressing for wounds,[1] in accordance with the principles laid down by Professor Bazy in the Beaujon Hospital.[2] Now it seemed to me that the tetanus patients, who had been subjected to serum treatment but had in addition received the above treatment, and whose organism had absorbed colloidal iodine owing to their wounds having been persistently in contact with this preparation,[3] recovered in a markedly higher proportion. Since then I have systematically combined colloidal iodine treatment, both in the form of dressings and in the form of daily intramuscular injections,[4] with serum treatment in tetanus. Tetanus patients who have been thus treated proved to have survived in a proportion of 68·8 per cent., a percentage that would appear to be distinctly higher than the average proportion of recoveries ordinarily obtained.[5]

I therefore consider it my duty to publish my cases at once, whilst at the same time I intend, with the collaboration of M. Viel and Dr. Revault d'Allonnes, to continue our researches on the association of colloidal iodine with serum in the treatment of tetanus.

1. *Colloidal Iodine Employed both Internally and Externally in Combination with Serum Treatment.*

CASE 1.—Patient sent to the tetanus department on Nov. 3rd, 1914, in a state of manifest tetanus, by Dr. D——. Wounded at Ypres on Oct. 29th. Shell wound of the left hip. Incubation period 5 days. The temperature has never reached 39° C. Pulse slow, never exceeded 115, and soon fell to 60. Firm trismus; biting of the tongue. This patient was brought to us in a state of absolute rigidity and with opisthotonos; frequent and intense convulsive attacks; spasm of the glottis of so alarming a type that he was prepared for tracheotomy; the operation could, however, be avoided. Deglutition was impossible for three days. The slightest attempt at deglutition brought on attacks of asphyxia. Treatment: The wound was dressed daily with colloidal iodine. Daily intramuscular injections of colloidal iodine. Intraspinal injections of antitetanic serum, 30 c.c. on the first day, 20 c.c. on the second, 25 c.c. on the third, and 30 c.c. on the fifth. Every three to four hours medicated enemata containing bromide of potassium 3 grm., chloral 5 grm. Subsequently the doses were reduced by one half, and after the fifth day hypodermic injections of bromide and camphor (aa. 1 grm.) in oil were substituted. Recovery in 15 days.

[1] A 25 per cent. oleaginous suspension, of medium coarseness, of electro-chemical colloidal iodine.

[2] Revue de Thérapeutique Médico-Chirurgicale, Feb. 15th, 1914; Gazette des Hôpitaux, March 19th, 1914; La Clinique, April 10th, 1914; Comptes Rendus du Congrès International de Pathologie, October, 1912.

[3] The above-mentioned articles prove the extremely high diffusibility of colloidal iodine in the organism whether it be injected intramuscularly or merely applied to absorbing surfaces.

[4] For intramuscular injections I have employed a 20 per cent. ultra-finely granular oleaginous suspension of electro-chemical colloidal iodine.

[5] In no case was the diagnosis of tetanus at all doubtful; most of the cases had been sent to us by the medical officers of various departments in a condition of manifest tetanus.

CASE 2.—Patient of the tetanus section. Wounded at Ypres on Nov. 4th, 1914. Fracture of the right leg and the right elbow due to shrapnel bullets. Incubation period 16 days. The onset was slow but progressive. Six days before and three days after the appearance of trismus the temperature rose to 40° C.; it remained in the neighbourhood of or below 38° The trismus was not very firm. The convulsions were not very intense, and mainly in the leg. Owing to the action of the risorius and of the face muscles, risus sardonicus was well marked. Few clonic spasms; biting of the tongue; no visceral symptoms. Treatment: External and internal administration of colloidal iodine, as in Case 1. Wellcome's antitetanic serum, 10 c.c. hypodermically, when the first signs became apparent; 40 c.c. intraspinally on the following day. Chloral 5 grm. per diem and bromide by the mouth. The symptoms increased progressively until the fourth day, then diminished until they disappeared completely on the eighth day. In this case one might question as to whether one were dealing with a case of benign tetanus that has been subjugated by treatment.

CASE 3.—Patient sent to the department by Dr. D—— on Nov. 12th, 1914, in a condition of manifest tetanus. Wounded at Ypres on Oct. 5th. The right leg had been pierced by a fragment of shell; penetrating shell wound of the right hand. Incubation period 6 days. On the 11th cramps in the wounded leg followed by a violent onset of very severe symptoms. Temperature fluctuating between 38° and 39° C., rising to 40° after each serum injection. Pulse varied between 110 and 140. Moderately marked rigidity of all the muscles of coördination, especially of those of the neck and jaw. Very violent and frequent convulsive seizures, the frequency depending on external stimulation. Biting of the tongue. From the fourth day onwards these crises of the external musculature became less intense and the intervals increased. On the other hand, splanchnic cardio-respiratory reaction set in; the respiration became noisy and gasping; during the pharyngeal spasms the face became cyanosed, froth issued from the lips, urine was passed involuntarily. Treatment: External and internal administration of colloidal iodine. Wellcome's antitetanic serum injected intraspinally; 40 c.c. on the day following the appearance of trismus; 40 c.c. of a French antitetanic serum on the third day; 30 c.c. of the same on the tenth day. Chloral; camphorated bromide oil. Asphyxia on the tenth day. Death was only avoided by immediate tracheotomy. Cannula removed on the fourteenth day. From this day forward the patient entered into convalescence as regards his tetanus; the incisors could be separated for 1 cm., the pupils and the eyes regained their movement. The symptoms now continued to ameliorate; three days after the onset only the slightest trace of trismus accompanied by unimportant irritation of the trachea and bronchia remained, the latter being the after-effects of the tracheotomy.

CASE 4.—Patient sent to the tetanus department by Dr. J—— on Nov. 16th, 1914, in a condition of manifest tetanus. Wounded on Nov. 3rd at Ypres. Fistulous wound of the thigh due to fragments of shell. Incubation period 11 days. During the night of the 14th–15th the patient twice bit his tongue. On the 15th at 6 P.M. there was difficulty of deglutition, slight trismus. The course of the attack was slow but progressive. Temperature 30·5° C. on the 15th and 16th. Fixed risus sardonicus; slight rigidity of the neck and trunk; no contractions of the limbs; no crises. Treatment: As in previous case. Rapid recovery. Normal temperature from the third day onwards; the risus sardonicus and slight trismus persisted for another eight days. The same question arises in this as in Case 2: Are we dealing with a case of benign tetanus or with one in which the tetanus has been subjugated?

CASE 5.—Patient sent in by Dr. B—— on Nov. 25th, 1914, in a condition of manifest tetanus. Wounded at Ypres on Nov. 18th. A piece of exploded shell penetrated at the outer border of the right scapula. He was a powerful muscular man. Incubation period 7 days. Fulminating onset. On the morning of the 25th towards 10 o'clock he manifested no symptoms of tetanus; he was chloroformed for an attempt at extraction; at 4 P.M. the spasmodic attacks were of extreme violence. Temperature 38·4° C.; pulse 80; opisthotonos; firm trismus, extremely violent crises of considerable duration and recurring every five minutes; biting of the tongue; glottic spasm producing asphyxia; violent colic with diarrhœa; myosis. Treatment: External and internal administration of colloidal iodine. French antitetanic serum, 55 c.c. intraspinally on the first day; 40 c.c. on the third day; chloral; camphorated and bromide oil. After having moderated for 48 hours the temperature rose above 39° on the fourth day, the symptoms becoming aggravated at the same time. Syncope on the sixth day owing to arrest of the cardiac action; the patient was revived by artificial respiration and massage of the heart; he was able to speak a few words, but succumbed two hours later.

CASE 6.—Patient sent in by Dr. J—— on Nov. 16th, 1914, in a condition of manifest tetanus. Wounded on Nov. 2nd at Ypres. Wounds: (*a*) On the right thigh three wounds from shell fragments, the two first forming a transverse fistulous track in the middle part of the thigh, one wound on the surface of the knee at the internal border of the patella, infected; (*b*) fistulous wound of the right forearm from shell fragment, fracture of the radius—splinters of bone were removed; (*c*) penetrating wound of the left cheek from shell fragment having traversed the jaw and broken a tooth. Special remarks: This patient received a hypodermic injection of antitetanic serum 11 days after he was wounded and three days before the onset of tetanic symptoms. Incubation period 14 days. Sudden onset, initial symptoms grave. Temperature 38·2° C.; pulse 90–100. Violent contractions of the masseters, the neck muscles, and those of the trunk and limbs; violent crises every eight to ten minutes; biting of the tongue; no glottic or vesical spasm. The tetanic symptoms improved from the fifth day onwards, but the temperature did not become normal until the fourteenth day. Treatment: External and internal administration of colloidal iodine; belated prophylactic hypodermic dose of 10 c.c. of French antitetanic serum as already mentioned; 50 c.c. administered intraspinally on the day of onset; chloral; camphorated bromide oil. One month later slight contracture of the face muscles still persisted.

2. *Colloidal Iodine as a Wound Dressing Combined with Serum Therapy.*

CASE 7.—Patient sent in by Dr. H—— on Oct. 1st, 1914, in a condition of manifest tetanus. Wounded on Sept. 16th at Soissons. Transverse wound of the left leg; complete severance of the tendo Achillis; partial division of the tibia. On arrival there was copious fœtid suppuration; much sloughing. Incubation period 11 days. Gradual onset. Temperature, wide declining fluctuations; maximum 40° C. on the fifth day and 38·5° on the onset of tetanic symptoms. Spasmodic symptoms; opisthotonos, biting of the tongue, difficulty in deglutition, glottic spasm. Treatment: The sinuous and very extensive wound, which exhibited loss of substance and suppuration, was sprinkled daily with a 25 per cent. suspension of colloidal iodine; compresses soaked in the same preparation were allowed to remain on the wound. The absorption of the metalloid, due to the finely divided state of the colloid, is such that the iodine can be detected in the urine 20 minutes after the preparation has been applied.[6] Intramuscular injection of 15 c.c. of French antitetanic serum on the day of onset; 45 c.c. injected intraspinally on the fourth day; 15 c.c. intraspinally on the sixth day; chloral; camphorated bromide oil. Recovery from tetanus in 15 days. The wound continued to cicatrise in a normal manner.

CASE 8.—Patient in the tetanus section. Wounded at Maucourt (Somme) on Oct. 7th, 1914. Sinuous penetrating wound, due to exploded shell, in the lower and outer region of the left thigh; suppuration; shreds of military cloak removed from the wound. Incubation period 8 days. Gradual onset. Slight trismus on the evening of Oct. 15th. On the morning of the 16th the dental arches could only be separated for 2 cm.; no contractions of the neck and trunk muscles; deglutition easy, but twitching caused in the wounded limb. Temperature normal; pulse 96. Spasmodic seizures provoked by lumbar puncture. On the 18th pains in the viscera, violent colic, and inability to pass urine; the contraction of the sphincter of the bladder was such that it rendered the passage of a catheter uncomfortable. Treatment: Daily dressings with colloidal iodine. 50 c.c. of French antitetanic serum injected intraspinally on the 16th, and on the subsequent days in small frequent doses, 10 to 15 c.c.;

[6] Tuffier: Paris Médical, 1913.

chloral; camphorated bromide oil. Protracted form; recrudescence of the crises on the seventh day; recovery could not be regarded as definitely attained until the fourteenth to fifteenth day.

CASE 9.—Patient in the tetanus section. Wounded at Ypres on Oct. 26th. Fistulous wound on the right side of the thorax; shell wound in the right thigh, emphysematous gangrene. Incubation period 12 days. On the morning of the 8th spasmodic attacks in the right leg, recurring every five to eight minutes; slight trismus. Temperature between 37° and 38° C.; rose to 40° after the first injection of serum. Slight opisthotonos; the spasms spread to the entire body; biting of the tongue. Treatment as in Case 8. Recovery after 10 to 15 days.

CASE 10.—Patient sent in by Dr. H—— on Oct. 9th, 1914, in a condition of manifest tetanus. Wounded in the left arm by a shell fragment on Sept. 27th. Amputation at Villers-Bretonaux on Sept. 29th. Arrived at Rennes with trismus. Incubation period 11 days. After each injection of serum the temperature rose above 39° C. and dropped to 37° on the third day on each occasion. Pulse 130 to 140, poor. Trismus; intense opisthotonos; violent and frequent spasmodic attacks; biting of the tongue; profuse sweating. Grave cardio-respiratory type; attacks of asphyxia due to spasm of the glottis; tracheal obstruction. Treatment: As the stump exhibited a large bleeding surface it was sprinkled thoroughly with colloidal iodine and dressed with the latter. French antitetanic serum injected intraspinally, 50 c.c. on the first day, 30 c.c. on the third day, 20 c.c. on the seventh day, and 20 c.c. on the eleventh day. Course: The condition remained stationary and was grave and alarming for 15 days. A distinct transitory amelioration after each injection of serum, then recrudescence of the symptoms. Towards the fifteenth day distinct improvement, and complete recovery on the twentieth day. Two and a half months after the injury the stump was still suppurating.

CASE 11.—Patient sent in by Dr. D. H —— on Oct. 27th, 1914, in a condition of manifest tetanus. Wounded on Sept. 9th. Shell wound at the lower supra-articular end of the left leg; the two orifices were very lacerated; splintered mass of bone; infected. Incubation period (?) 7 days. Temperature between 37° and 38° C.; pulse normal. Opisthotonos; trismus; moderately strong and frequent intestinal spasms; biting of the tongue; profuse sweating. Treatment: Immediate drainage. The drug treatment may be divided into two periods—(1) hypodermic serotherapy without colloidal iodine up to the tenth day; and (2) external application of colloidal iodine combined with administration of chloral. Course: The original condition remained unchanged and without exacerbation or any marked amelioration for about two weeks. Recovery was gradual, and was definitely reached on about the twenty-fourth day.

CASE 12.—Patient sent in by Dr. B —— on Nov. 2nd, 1914, in a condition of manifest tetanus. Wounded at Ypres on Oct. 26th. Transfixing wound of the left thigh due to shell fragment. Incubation period 6 days. Gradual onset. Temperature 37° C. on the morning of his admittance to the tetanus ward, and remained so until the following evening; rise to 39° and 40° on the subsequent days. Pulse 120 on the third day, irregular. Opisthotonos; rigidity of the wounded thigh; biting of the tongue; profuse sweating; alarming and frequent glottic spasms—we were on the point of performing tracheotomy. Treatment: Wellcome's antitetanic serum injected intraspinally; 30 c.c. on the day of onset, 20 c.c. on the following day, 20 c.c. on the fourth day, and 30 c.c. on the seventh day. The absorption of the colloidal iodine must have been very limited, for the dressing consisted merely in applying compresses soaked in colloidal iodine to the orifices of the wound; chloral; camphorated bromide oil. On the eighth day the pulse-rate continued to increase and reached 140. To the phase of excitation of the centres there succeeded a new stage; absence of trismus, ability to open and close the mouth in an apparently normal manner, re-establishment of the palpebral and ocular movements. But swallowing and expectoration became impossible, either because the spasm of the glottis persisted, or because it had been replaced by paralysis of the pharynx and of the velum palati. Agony, in which symptoms of asphyxia and cardiac failure were blended. Death on the morning of the ninth day.

CASE 13.—Patient sent in *in extremis* on Nov. 2nd, 1914, by the head physician of Supplementary Hospital No. 79. Wounded at Ypres on Oct. 26th. Fracture of the right forearm by a large shell fragment which had remained in the wound; contused wound of the hairy skin; fracture of the right fibula by shell fragment; copious suppuration. Incubation period unknown; in any case less than six days. Temperature 39° C., but soon attaining higher levels on the subsequent days. Total and persistent rigidity of the trunk, the neck, and the limbs; attacks of cramp, especially in the fractured forearm; biting of the tongue; abundant and profuse sweating; acute pains in the epigastric region may be attributed to tetanus of the diaphragm; glottic and pharyngeal spasm leading to obstruction of the bronchia. Dread of every manipulation that may bring on a spasmodic attack. Treatment: On the third day after invasion the wound in the forearm was opened up and a fragment of shell the size of a small nut was extracted, the ulnar nerve having been injured. The dressing consisted of compresses soaked in the colloidal iodine preparation. Wellcome's antitetanic serum, injected intraspinally, 30 c c. on the day of admittance, 30 c.c. on the next day, 20 c.c. on the third day, 20 c.c. on the fourth day, and 30 c.c. on the seventh day; chloral; camphorated bromide oil. On the seventh day after admittance the heart became accelerated, the respiration obstructed, the temperature dropped below 38°, and death supervened from asphyxia and cardiac failure.

CASE 14.—Patient sent in by Dr. J—— on Oct. 14th, 1914, in a condition of manifest tetanus. Wounded on Sept. 29th. Fragment of shell in the foot, having entered from the inner border; extracted from beneath the head of the fifth metatarsal. The fragment was irregular and of the size of a hazel-nut; at the same time shreds of manure were removed. Incubation period 6 days. Temperature raised, 39° to 40° C.; pulse 130. Very frequent and violent spasms; biting of the tongue; firm trismus; profuse sweating; uninterrupted asphyxial attacks. Treatment: Drainage by means of a compress soaked in colloidal iodine preparation, the end emerging from the orifice of the wound. 50 c.c. of French antitetanic serum injected intraspinally. The attacks continued to increase both in frequency and violence; the patient died on the following day from mechanical asphyxia, as much due to the thoracic muscles as to those of the glottis. Recently acquired experience teaches that one might perhaps have combated the asphyxia by tracheotomy.

CASE 15.—Patient of the tetanus section. Wounded on the banks of the Marne on Sept. 16th, 1914. Wound of the prepatellar serous bursa, containing shreds of clothing. Incubation period 11 days. Onset of tetanic symptoms about 4 P.M. on the 26th; mild trismus; mild opisthotonos; slight contractions of the muscles of the face and pharynx; muscular twitching. All these symptoms increased on the next day. Temperature about 37° C. Biting of the tongue; no profuse sweating; incontinence of urine during chloral narcosis. Treatment: On the day of onset, at 9.30 P.M., Dr. Doyen administered an intraspinal injection of 30 c.c. of French antitetanic serum, then 10 c.c. of English antitetanic serum after a few c.c. of cerebro-spinal fluid had been drawn off; on the third day 30 c.c. of French serum intraspinally, and on the fifth day 40 c.c. of French serum intraspinally; high doses of chloral. On the seventh day comatose condition, probably due to the chloral; involuntary micturition—this symptom disappeared on the drug being stopped. The recovery was slow, but could be regarded as complete at the end of 20 days.

CASE 16.—Patient sent in by Dr. B—— on Oct. 12th, 1914, the diagnosis being tetanus. Wounded at Lihon on Sept. 25th. Wound due to fragment of shell which had remained in the right leg; fistulous wound of the thorax. Incubation period 17 days. Gradual onset. Temperature 37° C. on admission, 40° in the evening; it continued to oscillate between these two limits for four days, and then fell 1° during the next three days, remaining normal subsequently. Contractions; intense trismus and crises during the first three days; biting of the tongue; sweats. Treatment: Intraspinal injections of French antitetanic serum, 50 c.c. on the day of invasion after drawing off a few c.c. of cerebro-spinal fluid; on the third day 20 c.c. of the French serum after drawing off 20 c.c. of cerebro-spinal fluid; little chloral. From the third day onwards the condition improved, the crises diminished both in number and

intensity, and the trismus became less marked. On the fourth day the improvement was such that it was considered unnecessary to administer a fresh injection of serum. Recovery was confirmed after the eighth day, and was maintained at the end of two months.

CASE 17.—Patient of the tetanus section. Wounded on the banks of the Marne on Sept. 15th, 1914. Shell wound of the inner surface of the left leg; diffuse cellulitis; incised freely on admission. The temperature curve shows that the period of incubation may be gauged in two ways. This patient was operated on for a radical cure of hernia on the sixth day after admission. If Nicolaier's bacillus had infected the wound on Sept. 15th the incubation period would have been 43 days at the most. If, on the other hand, the tetanus bacillus invaded the patient later, at the time of the operation, the period would have been 27 days at the most. The abscess in the scrotum, which supervened on the thirty-second day after the operation, is in favour of the second hypothesis. Onset extremely gradual; mild spasms of the mylo-hyoid producing a shagreen-like condition of the skin. Stereotyped sardonic expression of the mouth and eyes; very slight trismus; movements of the head caused the sterno-cleido-mastoid muscles to stand out under the skin. The temperature, having fallen to the normal level on the day after admission subsequent to the opening of the cellulitis, remained normal for 14 days. In the next few days it rose to 38·4° C., when the hernia operation was performed. It remained at about 38° with morning remissions for nine days and then fell for four days to from 36·8° to 37·2°. It then remained subnormal for nine days, and an injection of 10 c.c. of antitetanic serum having been administered on the following day, rose to 38·6° within 24 hours, dropping to normal on the day after, to rise again to 39·2° three days later when a scrotal abscess developed, and gradually sinking in four days to the normal level. The pulse varied in keeping with the temperature without being in any way peculiar. Biting of the tongue; no difficulty in swallowing or micturition; respiration stridulous on account of pharyngeal spasm. Treatment: Intraspinal injection of 10 c.c. of Wellcome's antitetanic serum. Recovery probably spontaneous.

CASE 18.—Patient of the tetanus section. Wounded on the banks of the Marne on Sept. 17th, 1914. Fistulous wounds in the right arm and thorax due to shell fragments. Incubation period 15 days. Slow but progressive onset. Temperature only slightly raised. The trismus became more and more marked from the first to the third day; no crises; biting of the tongue; no difficulty in swallowing; no respiratory discomfort. Treatment: Intraspinal injections of French antitetanic serum without preceding evacuation of cerebro-spinal fluid, 45 c.c. on the first day and 40 c.c. on the third. The first injection was followed by a severe general eruption of urticaria. No chloral or any other treatment. After the fourth day the symptoms rapidly subsided. Benign form. The question arises as to whether the serum was of any use whatever.

CASE 19.—Patient sent in by Dr. H——on Nov. 2nd, 1914, in a condition of manifest tetanus. Wounded at Ypres on Oct. 25th. The tetanus was already manifest when the patient was received by Dr. H——. General spasms had already been present for two days, the first having been felt on the evening of Oct. 30th. Bullet wound; wound of entry in the left buttock, that of exit on the inner surface of the thigh, 10 cm. from the fold of the buttock. Incubation period 5 days at the most. Temperature 36° C. on arrival, 39° after 24 hours, and 40° on the fourth day. Rapid, bad pulse. The state of intense and permanent contraction of all his muscular system might be described by the word "obstruction"; clonic spasms on the slightest excitation; biting of the tongue; profuse perspiration; the most alarming glottic spasms; urine and semen passed during the attacks; tracheotomy became necessary. The patient's intellectual power remained unimpaired to the last minute; though unable to speak, he succeeded in writing a few words, "I am thirsty," "Thanks." Treatment: Intraspinal injections of 50 c.c. of Wellcome's antitetanic serum on the first day, 20 c.c. on the next intravenously, 10 c.c. on the third day, and 10 c.c. on the fourth day. Chloral enemata; camphorated bromide oil. Tracheotomy performed on the third day; on the fourth day tracheo-bronchial obstruction, copious mucous discharge, which was inadequately evacuated through the tracheal cannula, although the latter was of large calibre. Death simultaneously from asphyxia and circulatory failure.

CASE 20.—Patient of the tetanus section. Wounded on the banks of the Marne on Sept. 28th. Shell wound in the heel, slight. Incubation period 6 days. Sudden onset. Temperature (39° C.) higher before the appearance of tetanus than after. Very muscular man. Trismus; opisthotonos; very violent and frequent attacks of spasm threatening asphyxia; biting of the tongue; profuse sweating. Treatment: 50 c.c. of French antitetanic serum intraspinally. Fulminating type; death on the fourth day. I tried in vain to open his jaws with a view to performing rhythmic traction on the tongue and artificial respiration. It was on this occasion that I made up my mind always to keep the materials necessary for tracheotomy in the special ward for tetanus patients.

CASE 21.—Patient sent in by Dr. V—— on Oct. 14th, 1914, in a condition of very acute tetanus. Wounded at Ypres on Oct. 8th. Shell wound in the lower part of the abdomen, entry in front of the left crural arch, exit above the pubis. Incubation period less than 7 days. Fulminating onset. Temperature between 39·5° and 40° C. Small, thready, rapid pulse; pendular rhythm of the heart; extreme rigidity of all the muscles. Treatment: In the department of Dr. V—— French antitetanic serum intramuscularly, about 12 hours before the diagnosis was confirmed; 15 c.c. in the lumbar region 12 hours later. In my special department 30 c.c. intraspinally on Oct. 14th. Death in a state of muscular relaxation on the morning following his admission to the tetanus ward.

CASE 22.—Patient of the tetanus section. Wounded at Ypres on Oct. 22nd, 1914. Shrapnel wound in the thigh and left buttock of benign appearance. Incubation period 7 days. Slow progressive onset. Temperature 39° C. on the evening preceding the appearance of symptoms and 37° and 38° on the day itself. Pulse good on the first day; contractions and violent crises on the first day; firm trismus; biting of the tongue; profuse sweating; glottic spasm. Treatment: On the first day 30 c.c. of Wellcome's antitetanic serum were given, with chloral, by means of injections. On the afternoon of the second day the general condition was good, the eyes were mobile; there was little in the way of spasms and contractions. As the supply of serum had run low and the patient felt well, no fresh injections were made in order that the serum might be reserved for more serious cases. On the morning of the fifth day the condition became considerably aggravated; the trunk was in a condition of general contraction; the teeth were firmly set; the breathing was noisy and difficult. The condition had become grave. Towards midday the serum arrived. The patient was turned on his side in order to administer the intraspinal injection; three tubes of 10 c.c. each were injected; after this intervention extremely violent spasmodic crises supervened; the glottis closed; the patient was suffocating. He was rapidly removed to the operating theatre on the next floor below; a knife and forceps were found; asphyxia was almost complete, the patient had not breathed for nearly ten minutes; rapid tracheotomy; artificial respiration for five minutes. The breathing was re-established and the muscular system became less rigid. As no cannula was to be found we were forced to remove the inner cannula from a neighbour who had been tracheotomised the evening before—the one was left with the outer tube, the other with the inner. For two hours all went well, the cannula became obstructed, and the coagula were expelled forcibly. All at once the tube became completely blocked; it was removed, and the doctor was sent for at once, who hurried to the spot but arrived too late. Death from asphyxia due to the accidental obstruction of the cannula.

CASE 23.—Patient of the tetanus section. Wounded on the banks of the Marne on Sept. 16th, 1914. Wound from a rifle bullet on the posterior surface of the right thigh; general cellulitis of the whole limb. Incubation period 14 days. Insidious onset. Temperature oscillated about 40° C., might be attributed to the cellulitis. The pulse corresponded to temperature, 130 to 140. Risus sardonicus; trismus; difficulty in swallowing; spasmodic attacks; definite but mild signs of tetanus. Treatment: Intraventricular injections of 10 c.c. of the French antitetanic serum; chloral. The cellulitis was incised and drained six

days after the injury and eight days before the appearance of tetanus. After this intervention the temperature remained about 39° for four days. On Sept. 26th it suddenly rose to 39·8°, and on the next day to 40·4°. The patient manifested all the signs of septicæmia—drawn and leaden facies, rapid and bad pulse, dry tongue, diarrhœa. This condition was maintained subsequently, and it was only five days after the diagnosis of septicæmia had been made that the symptoms of tetanus appeared. The day following their appearance, 36 hours after the intraventricular injection of the serum, the patient died in a condition of muscular relaxation. This death should, it appears, be attributed, not to the tetanus, which was mild and in its early stages, but to the septicæmia.

Properly speaking, the following case ought not to be included in the series. The patient had arrived *in extremis*, emphysematous gangrene immediately recommenced in the stump, and one can hardly put down his death to tetanus.

CASE 24.—Patient of the tetanus section. Wounded in Belgium on Sept. 20th, 1914. He was left lying for three days on the battlefield before being picked up. Crushing of the femur in its upper third to the extent of about 10 cm. On the patient's arrival gas escaped from the cellulitic thigh; in addition there were painful cramps in the wounded limb. The diagnosis of tetanus was considered, but left undetermined. Incubation period not known, but in any case not less than 8 days. Temperature about 40° C.; pulse 140; profuse sweating. Emergency operation on his arrival, amputation below the trochanter. On the morning of the next day, Oct. 1st, trismus. 10 c c of the French antitetanic serum injected into each of the two cerebral ventricles. In the afternoon great restlessness; he beat his breast and expectorated a great deal; then he laughed, and joked in a delirious manner, asked to be allowed to get up; the trismus had diminished; garrulous; he recognised his relatives who had come to see him. Death on the same night.

Conclusions.

1. When one considers these cases as a whole the gross percentage figure of 58·8 survivors in cases of manifest and authenticated tetanus would seem to indicate that the treatment may have exerted some influence. The therapy employed was somewhat complex. Of the elements composing it, which, it may be asked, have been of utility? The measures employed were of two kinds. The object of the first was to prevent the onset of tetanus; as to this point one principle has emanated from the daily visiting of the patients. This precept is as follows:—

2. The treatment of tetanus demands that attention should be paid to all the factors; it must not follow some stereotyped formula, but should be gauged step by step according to the course of the symptoms. The treatment of tetanic attacks consists not only in employing opportune interference, but also, and perhaps above all, in not interfering unnecessarily, not touching the patient unnecessarily, not making him drink too frequently, not attempting to feed him at all costs—all these negative precautions are certainly of great value in contributing to his recovery. As to positive intervention, this should satisfy two indications: (*a*) to combat the fatal accidents connected with the respiratory system by performing tracheotomy, the instruments for which operation should always be ready to hand in the ward; and (*b*) to combat fatal accidents attributable to the cardiac system by means of camphorated oil administered in frequently repeated doses and by chloral in doses that should not be excessive. I have never exceeded 5 grm. per diem of chloral, but the drug may also occasionally have to be increased, and, on the other hand, it may have to be suppressed, according to the particular clinical exigencies of the case.

3. The results obtained were as follows:—

		No. of cases.	Recovered.	Died.
Antitetanic serum.	Without colloidal iodine	10	4	6
	With colloidal iodine	14	10	4

We may subdivide the above recorded cases into two categories. Ten tetanus patients were treated by serotherapy without colloidal iodine treatment; of these, 4 recovered and 6 succumbed, giving a percentage of 40 recoveries. Fourteen patients were treated by serum therapy combined with colloidal iodine treatment; 10 recovered and 4 succumbed, a percentage of 68·8 recoveries. We are therefore justified in asking whether the association of colloidal iodine treatment with serotherapy may not possess a particular efficacy in the treatment of manifest tetanus. That this should be the case would, from a theoretical point of view, not be surprising when one bears in mind that the colloids tend to raise the opsonic index considerably as well as to increase the alexic power, and, on the other hand, that iodine, apart from its antiseptic properties, tends to induce active phagocytosis.

4. Colloidal iodine, whether it be administered in the form of intramuscular injections or be employed as a dressing for wounds, has never caused any local reaction, pain, or rise of temperature, and it is absolutely harmless. Numerous earlier experiments† have demonstrated the microbicidal and antitoxic power of colloidal iodine on pneumococcus, staphylococcus, Eberth's bacillus, coli bacillus, and even Koch's tubercle bacillus.

5. As regards further research, we should study the following problems: (*a*) What is the rôle played by the antitetanic serum in the treatment and cure of manifest tetanus? Though possibly lacking true curative action—that is to say, being incapable of destroying the tetanus toxin that has once become fixed to certain elements of the nervous system—it may be that the serum, if administered in time, may still be capable of immunising those parts of the central nervous system, more especially of the medulla, which have not yet been attacked, in such a manner that the tetanus intoxication may at least become limited in its progressive course, although any fixation that has already taken place will persist. (*b*) What is the action of colloidal iodine on the antitetanic serum treatment? Does it act by enhancing the action of the latter? or by catalysis? or as an antitoxic agent? or, again, by stimulating phagocytosis? In any case we may mention that in the eight most satisfactory of our cases the quantities of serum that were injected were considerably reduced. Finally, what is the proper dose? All these questions await a definite answer.

† Vide supra.

THE ASPIRIN TRADE MARK.—The Board of Trade has made an order regarding the aspirin trade marks, the effect of which is to make the word "aspirin" public property. As is well known this is the trade name under which the Bayer Company introduced acetylsalicylic acid and the name under which the drug is best known. It is now open to anyone to sell acetylsalicylic acid as aspirin, and it is hoped that this will not lead to any deterioration in the standard of the drug. As was mentioned in THE LANCET of Feb. 20th (p. 410) there are now several makers of acetylsalicylic acid in this country, and an examination of various samples has shown that chemically most of them are identical with the original aspirin.

ON HEADACHE ASSOCIATED WITH INTRANASAL DISORDERS.

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THERE is not any specific form or degree of headache in the common acceptance so far as I am aware that is characteristic of any one lesion in the upper respiratory passages, so that when we attach the designation "nasal" to headache we refer exclusively to the accredited organic source and not to any definite nature or location of the pain; but the term may pass, as it serves a useful purpose if we make proper allowances and do not attempt to force upon it a too rigid application.[1] A few examples will explain this. Some headaches are nasal indirectly rather than immediately, since though primarily arising from the source implied by the term, the resulting symptom may come about for the most part through the intervention of a changed condition of the blood, which reacts, we may suppose, upon the terminals of certain intracephalic peripheral nerves. More rarely we have evidence that a nasal headache is jointly produced, owing to the oculo-nasal distribution of the ophthalmic nerve, for it is found that a nasal defect can inhibit the best efforts of the refractionist to treat effectively an astigmatism or asthenopia until such defect has been disposed of, when relief comes to both the cephalic and ocular disturbance. Hence we cannot always draw a clear line between nasal and other headaches; indeed, there are numerous compound or mixed forms, the nasal stimulus, variable in degree, acting in consort with, e.g., a migrainous tendency, menstruation, or fatigue, which, singly or combined, manifest themselves by accentuating its effects.[2]

Etiology of Nasal Headache.

All evidence as to the etiology of nasal headache is derived from clinical experience. I am not aware of any investigations on other lines within recent years that have taught us a new fact. In every case we may assume a predisposition to this particular symptom because, although such proclivity to headache must be extremely common, it is difficult to explain otherwise the immunity enjoyed by people in whom one finds nasal conditions that would be highly productive of cephalic pain in the majority of mankind. There is much room for speculation as to the nature of this immunity, but I am confident there is no justification for stigmatising the opposite temperament as necessarily neurotic or neurasthenic.

Classification.

In attempting to classify the nasal causative agents commonly associated with headache, one finds it possible to arrange them into three groups, which placed in the order of their frequency and effectiveness are as follows: a simple or non-inflammatory, a chronic inflammatory, and a group in which inflammation or congestion is present more or less actively.

The utility of this arrangement is not greatly prejudiced by the fact that suppurative conditions may complicate the second and third groups, and that a thickened or deflected septum may do the same. In the *first group*, headache is due to pressure somewhere within the nasal chambers of one more or less rigid body such as bone or cartilage against another, the richly innervated mucous membrane—often the cushion of the septum—intervening. This agent or force, whilst the most direct in operation, derives much importance through being often unapparent until a careful search by expert means has been made. A good instance is exemplified by a septal spine projecting against a middle or inferior turbinate, far back, and concealed by an anterior deflection of the triangular cartilage; such a condition may not be discoverable till after systematic packing of the nasal passages with gauze moistened in adrenalin and cocaine solution, or the adoption of some other mode of application of these agents, or even indeed until the anterior obstruction has been resected.

The second or chronic inflammatory group includes intranasal changes that imply contact between less resisting surfaces, the morbid effects of any resulting pressure being presumably subsidiary to others of superior energy, some further explanation being desirable to account fully for headache. Simple degeneration of the turbinal or septal mucous membrane entailing softening of bone in more advanced middle turbinal disease; polypi or polypoid degeneration, and possibly an allied condition affecting the walls or lining of one or more of the accessory sinuses, include the commoner types of pathological changes in this group.

The primary effects of the foregoing disorders are stagnation of secretions, hindrance to drainage and ventilation, and reabsorption into the system of muco-purulent or purulent material. If the fossæ are structurally narrow, or one alone is cramped by a deflection of the septum, the remoter systemic effects are all the more pronounced; these consist of circulatory disturbance such as lymphatic stasis, anæmia, or toxæmia enhanced by mal-oxygenation of the blood owing to abeyance of the nasal functions.[3] Stasis in the cranio-nasal lymphatics, long accepted as a mechanical result of adenoid obstruction and one of the immediate causes of aprosexia, may be expected to arise out of these conditions, especially in young adults in whom adenoids are a frequent antecedent of the nasal morbid processes.[4] Anæmia and toxæmia we know promote headache, but I have noted severe nervous breakdown from obvious purulent reabsorption with but little pain in subjects who are not predisposed that way. When, on the other hand, pus is imprisoned in some sinus or cell space, especially of the ethmoid labyrinth, headache is invariably severe and often accompanied by acute mental depression; re-establishment of drainage quickly relieves these symptoms even though suppuration continue.

The third or inflammatory group embodies those cases in which headache is associated with rhinitis, in its various forms, moist and dry, pain always tending to subside as congestion passes off. We see it typified in acute coryza, especially if it implicates the accessory cavities: sometimes also after nasal operations before reaction has subsided. Under obstructive conditions headache accompanies spasmodic rhinorrhœa, either perennial or seasonal (hay fever), and we have a common

[1] A paper by Harrison Allen (U.S.A.), On the Headaches which are associated with Chronic Nasal Catarrh, Medical News, March 13th, 1886, is the first known to the author upon this subject.

[2] Harry Campbell: Headache and other Morbid Cephalic Sensations, 1894; also in opening the discussion on Headache at Aberdeen, Brit. Med. Jour., 1914.

[3] G. Macdonald: Diseases of the Nose, 1892.

[4] Professor Guy (Amsterdam) and William Hill (London); Leed discussion, Brit. Med. Jour., 1889.

illustration in the aching discomfort, frontal and facial, of iodism; tumefaction having occluded the apertures of the accessory cavities their normal air is believed to be exhausted by absorption, and this engenders pain.[5]

The dry forms of rhinitis are also liable to occasion headache; the familiar rhinitis sicca with slight crusting, or strings of sticky secretion, has frequently an alcoholic basis, but pain is less common than in the fœtid atrophic form, in which it is due either to the pressure or obstruction exerted by the foul inspissated masses which envelop the membranes. Some toxic absorption probably plays a part, but in all cases headache is diminished or kept at bay by free lavage. I have a patient suffering with this complaint in whom the local reaction after spraying the mucous membrane with adrenalin and cocaine will excite intense pain in the forehead accompanied by swelling and deep discolouration, pain radiating over the head and lasting four or five days.

The muco-perichondrium covering the sigmoid curves and angles formed by abnormalities of the septum, perhaps through intimate pressure, may independently set up headache, and if the projections impinge the opposite mucous surface at any point they usually establish adhesions. Synechiæ or adhesions are also sequelæ of traumatic intranasal inflammation and granulations, and form fibrous bands of adventitious tissue across the fossæ. In all these conditions headache is equally liable to occur, owing most probably to traction upon the nerve endings, as when they are destroyed I have always found that the pain is relieved.

Mechanism of Nasal Headache.

The mechanism of nasal headache can be best explained upon principles worked out for the rest of the body by Dr. Henry Head[6] and Dr. James Mackenzie.[7] The track of the nervous impulse is elucidated by a study of the fifth or trigeminal nerve and its connexions in some scheme or map such as I have already published,[8] pain being mostly referred from a seat of excitation within the nose to a distant part of the head, either in the distribution of the same nerve or in that of the second or third cervical. Supposing the impulse to arise within the nasal fossæ it is conceivable that the reference or projection will be either to the peripheral nerves of the scalp or to those of the dura. The weight of evidence seems to point at least in the case of pressure to the supra-orbital or occipital nerves of the scalp, yet in deep-seated nasal headache due to secondary circulatory disturbance there is no clear evidence that the dural branches are not involved. However this may be, admitting that the pain felt in a distant part somewhere in the distribution of the fifth, say the vertex, is referred from a nasal site of excitation, we may assume that an overflow of nervous impulse has taken place in some points or cell territories in the extensive sensory nucleus of the fifth nerve, situated in the pons and medulla, where other neurons from that distant part terminate. As a parallel example, if the sensation of pain is in the occipital region or back of the neck we assume that overflow has occurred lower down along the course of the descending spinal root. A theory for neuralgia or neuralgiform pain rests upon the assumption that an impulse can pass from one afferent nerve to another when such nerves are closely bound up in the same sheath, as are the strands of the nasal nerve with those of the supra-orbital in the ophthalmic division of the fifth.

FIG. 1.

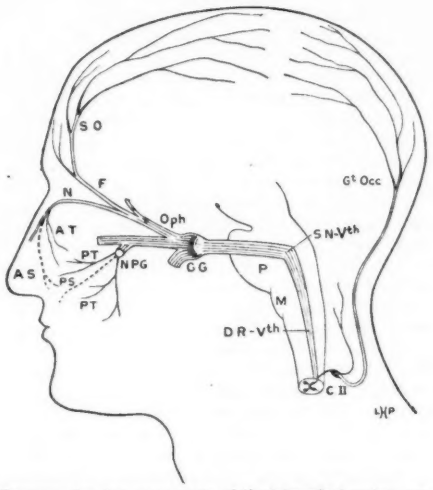


Diagram showing some parts of the trigeminal system concerned in headaches (dural filaments not represented). S O, Supra-orbital nerve. F, Frontal. N, Nasal. O ph, Ophthalmic. A S, Anterior septal. A T, Anterior turbinal. N P G, Naso-palatine ganglion. P S, Posterior septal. P T, Posterior turbinal. G G, Gasserian ganglion. P, Pons. M, Medulla. S N-vth, Sensory nucleus of fifth nerve. D R-Vth, Descending root of fifth nerve. Gt occ, Great occipital. C. II., Second cervical.

The accompanying illustration (Fig. 1) will help the reader to understand the misreference of pain to distant parts of the head. With regard to the occipital region, it will be seen that the afferent fibres from the nose and sinuses may terminate through the descending root of the fifth nerve in the same mass of grey matter at the tip of the posterior horn and the substantia gelatinosa, in which also end the fibres that carry afferent impressions from the occiput and enter the spinal cord through the second and third cervical posterior roots. For this explanation of referred headache in the occipital region, which owing to its lucidity appears to me to strengthen on anatomical grounds the whole ingenious postulate of "misreference" of pain, I wish to express my indebtedness to Dr. Gordon M. Holmes.

I have lately been considering whether the extremely narrow "anterior nasal canal" through which the nasal nerve descends into the nasal fossa may not, under changed conditions of the nerve or its sheath, exert pressure calculated to set up a rhinalgia otherwise obscure as to its causation. Furthermore, an examination of sections shows that the bony canal itself is liable to be extremely narrow in calibre. I am indebted to Professor Thane for calling my attention to the ethmoidal aperture of this canal. (See Fig. 2.)

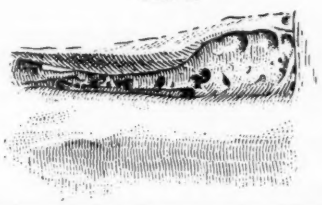
Diagnosis, Location, and Character of Nasal Headache.

It has been already indicated that the differential diagnosis of nasal headaches cannot be established by virtue of any characteristic feature. Their variation from the almost intolerable headaches of

[5] Guy: Ibid.
[6] Henry Head: Pain and its Consequences in Visceral Disease, Brain, 1893-4-6 and 1901.
[7] James Mackenzie: Symptoms, London, 1909.
[8] L. H. Pegler: A Map Scheme of the Fifth Nerve, with Letterpress and Tables, Baillière, Tindall, and Cox, 1913.

the organic cerebral class is, I presume, one of degree or continuity rather than of localisation, but if the symptoms of sinus suppuration be included under the category of nasal headache, as is generally done, the circum-orbital pain of maxillary and post-orbital pain of sphenoidal and ethmoidal sinusitis may be regarded as of greater diagnostic value. The most frequent *location* of nasal headache is over the forehead below the hair line, when the patient in reply to inquiry instinctively draws a hand across the brow. Any line of extension is usually directly upwards to the vertex, less commonly it encircles the temple, least often the pain is referred to the occipital region and nape of the neck. From the earliest writings upon this subject to those of the present time, endeavours have been made to associate certain regions in the nose with definite areas for painful referred sensations in the head, but a glance through one's clinical notes shows that no data of statistical importance can be gleaned from them by which to establish genuine relationship. The mechanism of referred headache already given should make this fact intelligible. Many patients suffering from nasal disease seem to allow themselves to become in a sense inured to headache and, hopeless of relief, make little complaint until questioned on the subject.

FIG. 2.



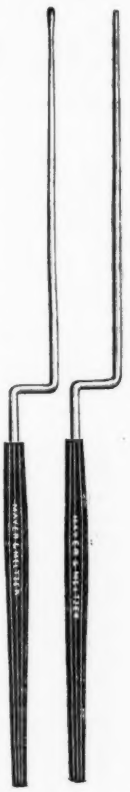
A view taken vertically to the upper surface of the left half of the macerated cribriform plate (sagittal section, anterior extremity pointing to left). The nasal groove is seen half hidden running between the ethmoidal apertures of the anterior ethmoidal and anterior nasal canals. Partly concealed by the front extremity of the crista galli and separated by a slight ridge from the opening for exit of the nasal nerve is the nasal fissure or slit, stated in Gray's Anatomy, 1913, to admit a process of the dura mater. For further details consult the author's paper on the nomenclature of the nasal nerves in the XVth Section of the Transactions of the International Congress of Medicine, 1913.

Not rarely pains of different localisation and character in the head afflict a patient concomitantly; a highly intelligent lady, mistress in a county council school, whose case I have watched for some years, distinguished her headaches into three, distributed over separate areas though affecting her more or less synchronously. One of these, which she described as almost unbearable, was a neuralgic pain at the back of the head and seemingly behind the eyes; it often recurred during the day, kept her awake at night, and seriously affected her thinking capacity; it is worth remarking that while it continued, a patch of white hair conspicuously marked its situation. In addition to headache she suffered from asthenopia associated with a low degree of astigmatism; there were also chronic throat irritation and some nasal obstruction occasioned respectively by adenoids and hypertrophy of the inferior turbinates. These comparatively mild conditions proved nevertheless to be the key for the relief of the ocular disturbance as well as of the headaches, for neither expert refraction work nor prolonged rest from duty made any tangible impression till adenoid extirpation and partial resection of the turbinates had been performed.

In *character and degree*, a nasal headache may range widely between a continuous dull ache or occasional neuralgia, and a fulminating and throbbing seizure radiating pain to the teeth and along all the branches of the trigeminal nerve. In such an attack the scalp is hot and exquisitely tender—a condition persisting after the pain has abated — and there are often photophobia and alarming cardiac depression. I have met with this extreme form in cases where an incurved middle turbinate was pressing forcibly against the septum, and especially where other factors aggravated the initial trouble. Although when more than one cause is in operation such a headache is rightly to be regarded as a compound one,[9] my experience is that if a proximate cause constituted by hard contact can be discovered and removed the attacks will not recur.

The complaint of a sense of tightness, if not of actual pain, at the root of the nose as the starting point of the headache often serves as a useful guide to the salient cause, and to the discovery of latent pressure or suppuration; sometimes, also, there are slight swelling and a bluish tint of the skin over the affected spot. If the lesion commence on one side, this disposition of the pain generally follows its extension towards the vertex; thus a unilateral character is given to the nasal headache, rendering it liable to be confused with true hemicrania or migraine. Absence of the classical signs of this complaint must be our guide in making a diagnosis, for if the patient can vouch for having experienced the fortification scotoma antecedent to the headache, admits a hereditary tendency, or has suffered from some other member of this symptom-complex, it is right to suspect that migraine is complicating the case. I have never yet seen genuine migraine in nasal disease as Grünwald[10] and others say they have, though the semi-characteristic symptoms of certain neuroses, such as the circular band pain of neurasthenia and the clavus of hysteria, may at least be closely simulated in nasal cases. A neurotic patient, aged 21, referred to me by a distinguished neurologist, at whose hands she had undergone a course of medical treatment and who suffered from a peculiar pain compared to driving a nail into the vault of the skull (clavus hystericus), gradually became free after I had relieved the pressure exerted by a depressed and deflected septum against an inferior turbinate on the left side; the clavus was slightly lateralised correspondingly to the nasal lesion, a fact of diagnostic interest.

FIG 3.



Author's nasal probe and cottonwool-holder for investigating pressures or other conditions in the nasal cavities.

It is somewhat humiliating to have to admit, in face of so much positive evidence as to cause

[9] Quain's Anatomy, vol. iii., part 2, p. 16.

[10] Grünwald: A Treatise on Nasal Suppuration, translated by Lamb, 1910.

and effect, that no intranasal appearance though strongly suspicious of setting up a painful excitation, and for all one can tell potentially pathogenetic, can safely be regarded as *pathognomonic*. A fairly reliable prognosis may sometimes be arrived at by spraying the suspected area with cocaine and watching for temporary relief, or by a cautious insinuation of the author's nasal probe[11] (Fig. 3) into the olfactory cleft, but the sign may ostensibly portend much pain which is non-existent, just as in some other case the intensity of the pain may seem to us out of proportion to the objective sign. This brings one again to the impression that the essential foundation is a constitutional *predisposition;* this term is our main resource, failing a better, in the absence of definite knowledge regarding a human problem at present awaiting solution; but we are little better informed as to the underlying cause of susceptibility to the nasal neuroses, catarrhs, and asthma, often enough the accompaniments or alternatives of headache. Hence the confirmation of our diagnosis depends theoretically upon what has been called the "therapeutic test," and this works out well enough in practice; for, depending upon the matured judgment that comes of long experience, one rarely operates on a properly chosen case without success.

Treatment.

The treatment of these conditions is not necessarily surgical in all cases; if the pain of nasal headache is consequent upon obstruction due to catarrh or inflammatory swelling, reducible by simple but effective measures, it disappears *pari passu* with their application. When the original source is apparently in the nature of pressure there is generally a concurrent sensation of stuffiness in the higher recesses of one or both of the nasal cavities, if the middle turbinate is hypertrophied and cellular, or if the corresponding region of the septum is deflected or thickened, seeing that these abnormalities seriously hinder the free upward passage of the inspired air. In such case surgical treatment of the septum or turbinates can only do good, especially if Casali's view of causation here is correct (cerebral venous obstruction).[12] Intermittency of pain, so common in this class of case, may be attributed to the influence of the vaso-motor system on the nasal blood-vessels and spaces controlling the variations between tumefaction and comparative collapse of the mucous membrane.

The modern, and now perfected operation of submucous resection of the septum is of great value in the treatment of irregularities of that structure that lead the way for headaches, and often facilitates a conservative treatment of the middle turbinates by rendering the septum negative as an opposing agent unless the former is very large or bulbous so as to press against the outer wall.

One may learn much from the study of cases in which a cure has been effected by operation performed at intervals according to the requirements of the situation. I have recently found it necessary to resect both middle turbinates a year after a previous operator had performed the submucous operation of the septum only partially relieving a severe neuralgic headache; the right turbinate had become cystic, but the opposite organ was wing-shaped and had been flattened against the outer wall of the fossa by the septal deflection; the final effect was satisfactory. More recently I have successfully adopted a plan of gently forcing the flattened middle turbinate away from the outer wall and causing it to be retained there for a sufficient length of time by suitable means; this, of course, is not always feasible. In another patient it was necessary to reduce both inferior and middle turbinates successively at intervals during a period of three years before entire freedom from headache was attained. The result made it evident that each turbinate had by pressure contributed a part towards the elicitation of pain, and that this might therefore be termed a case of complex nasal headache.

So far I have desisted from resecting a middle turbinate in a doubtful case when I could perceive no actual contact with a neighbouring structure, but surprises sometimes await the rhinologist in this branch of his art. A distinguished *confrère* has related how he once fell into serious disfavour through declining to operate in response to a patient's reiterated request, his excuse being the very cogent reason that I have indicated. Following this persistent refusal another surgeon was prevailed to step in and resect the turbinate, after which the headache '*s'enfuit, et fuit encore.*'

Relief usually follows quickly upon the elimination of pressure unless the region is plugged after operating, when it may be slightly delayed. I have once or twice had an opportunity of noting the effect of a gauze dressing left by mischance in the olfactory cleft. The pain set up by this foreign body has not differed very materially from what is usually described when both opposing surfaces are nasal and vital. After clearing away the gauze the relief obtained is also essentially the same in all respects. I mention this fact because it seems to refute an opinion that has been expressed that turbinectomy in such an instance acts by producing an effect through the vaso-motor system and not by the removal of pressure upon the sensitive nerve terminals.[13] The recovery of headache after surgical treatment may be somewhat tardy in some patients, in which case a short course of bromides or a few doses of phenacetin with caffeine are very helpful in accelerating the cure.

In conclusion, I should like to state once more that where there is the complication of an element of nasal disorder, with a dyspeptic, bilious, or other example of functional headache, the elimination of that nasal element should greatly ameliorate the severity of the general suffering, not only temporarily, as some assert, but permanently. In short, setting aside the purely cerebral organic headaches, and the numerous other forms which are beyond the scope of the rhinologist, there remains a large field of utility in this particular sphere which is always within his reach.

Harley-street, W.

[11] S. Auerbach: Headache, and its Varieties, &c., translated by Ernest Playfair, 1913.

[12] Casali: Quoted by R. J. Behan; Pain, 1914.

[13] L. H. Pegler: The Treatment of Nasal Insufficiency, Brit. Med. Jour., 1900. Hare: Quoted by Francis, London discussion, Brit. Med. Jour., 1910.

ROYAL DEVON AND EXETER HOSPITAL.—The 174th annual report of this institution, which has just been issued, states that during the past year 1926 in-patients were admitted, against 1680 in 1913, and this is the largest number of in-patients ever treated in one year at the hospital; the out-patients were 4248 compared with 3937 in the previous year. The ordinary income was £11,064 and the ordinary expenditure £12,479. The cost per occupied bed was £63 7*s.* 2*d.* per annum.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OTOLOGY.

Tuberculosis of the Auditory Apparatus.

THE meeting of this section held on Feb. 19th was devoted to a discussion on Tuberculosis of the Auditory Apparatus, Dr. ALBERT GRAY, the President, being in the chair.

Dr. WYATT WINGRAVE said that one of the first things sought for in examining ear discharge was the tubercle bacillus. In acute tuberculosis of the ear there was a reasonable chance of finding it, but it was almost hopeless to expect to in the chronic cases. He had only succeeded in his search in 16 per cent. of the chronic cases, while in the acute he was rewarded in over 50 per cent. In chronic discharges from the middle ear there was an acid-fast bacillus bearing a very close resemblance to that of tubercle, and it required careful analysis to differentiate, the bacillus of tubercle being alcohol-fast. In acute tuberculosis one found plenty of bacilli but very few giant cells, but in chronic cases this was reversed.

Mr. J. S. FRASER (Edinburgh) demonstrated a series of fine specimens of aural tuberculosis.

Mr. ARTHUR CHEATLE exhibited a series showing the continuity of tuberculosis of bone and membranes. He proceeded to discuss the question of human as against bovine tuberculosis, and related the case of a child, 7 weeks old, of wealthy parents, who had a discharge from the ear, which he (the speaker) regarded as tuberculous, although at the time there was no facial paralysis. An extensive operation proved to be necessary, and after a seaside residence the child recovered perfectly. The bacillus was proved to be of the typical bovine variety. He believed all the cases of the kind seen in children were bovine, and that infection took place through the Eustachian tube, milk being the infecting vehicle. He had never seen an adult with tuberculosis of the temporal bone secondary to lung tuberculosis in whom the disease ran the same course as it did in an infant; probably in the adult it was human tuberculosis and in the infant bovine.

Mr. C. E. WEST said that he had very rarely seen tuberculosis of the middle ear in either adults or children get well after extensive loss of membrane and secondary infection. He agreed that the typical course of the disease in the child differed from that in the adult; but of three recent cases of proven tuberculosis in children two were bovine and one human, the latter showing extensive destruction, with invasion of the labyrinth. The differing behaviour, therefore, he would ascribe to the character of the soil as well as of the seed. Owing to the habit of children putting their fingers into all kinds of places and orifices and then into their ears, the infection in them was usually very mixed. The majority of the adult cases he had seen had recovered if there had been no secondary infection or perforation, but he had never seen a chronically open tuberculous ear in an adult recover. The secondary infection with cocci, and especially with saprophytes, rendered the problem of disinfection of the ear almost insuperable. His chief hope for the future lay in the prospect of increasing immunity reaction, following upon bacteriological research.

Mr. E. D. DAVIS and Mr. W. STUART-LOW discussed the operative indications and technique.

Dr. LOGAN TURNER sent an interesting contribution stating that in eight years at Edinburgh Royal Infirmary there were 51 children under 15 years who had discharge from one or both ears of tuberculous nature. During the same period there were 1797 cases of middle-ear suppuration, of which 2 per cent. were tuberculous. 48, or 9 per cent., cases of middle-ear suppuration under 5 years were of the same character. In 43 of these 48 the discharge commenced before the first year of life had elapsed. During the eight years there were only 9 adult cases of tuberculosis of the ear, as compared with 51 in children. 88 per cent. of the affected children were bottle-fed, and in regard to some there was no record as to this. Facial paralysis occurred in 45 per cent. of the cases. Four of the patients died from tuberculous meningitis.

Sir STCLAIR THOMSON found but rare opportunities for the study of tuberculous disease of the ear in a large sanatorium; he had seen only 2 cases among 700 tuberculous patients, although 178 had tuberculous laryngitis. The two cases were painless and the discharge only slight. The few cases of the kind he had had, both in hospital and private practice, seemed to have been quite uninfluenced by sanatorium treatment.

Dr. DUNDAS GRANT found, on looking over numbers of cases, that there was only one case of suppuration of the middle ear to every ten of tuberculosis of the larynx, and he was sure that most of the suppurating cases were not tuberculous. He thought that in many cases of tuberculosis of the mastoid in children the infection was through the blood; but in the adult the infection appeared to be through the Eustachian tube, though this should not occur in health because the ciliary action tended to drive any infection towards the pharynx. But in wasting disease the patency of the Eustachian tube was increased. This had a very important bearing upon both prophylaxis and treatment. The main preventive in the child was care as to the purity of its milk food, while in the adult the condition of the nasopharynx should be watched. In some cases he recognised the disease owing to the presence of more than one perforation of the membrane.

Dr. W. JOBSON HORNE pointed out that bone had been found to be more susceptible to bovine than to human tuberculosis, and emphasised the large proportion of infants who were bottle-fed among the affected infants. He agreed as to the rarity of the involvement of the ear in patients suffering from general tuberculosis.

The discussion was continued by Mr. RICHARD LAKE and Mr. T. MARK HOVELL.

MEDICAL SOCIETY OF LONDON.

Continued Discussion on Radiography in its Relation to the War.

A MEETING of this society was held on Feb. 22nd, Sir JOHN BLAND-SUTTON, the President, being in the chair. The discussion, adjourned from Jan. 25th (reported in THE LANCET of Jan. 30th), was reopened by

Dr. A. C. JORDAN, who said that it might be inferred from recent discussions and articles that the precise localisation of bullets and other foreign bodies was of chief importance, whereas such localisation constituted but a small part of the uses of the radiographer in war surgery. He exhibited many radiograms which demonstrated the several points concerning which the radiographer could be of assistance to the surgeon, and an apparatus which provided a rapid method of precise localisation of foreign bodies by the fluorescent screen.

Dr. G. HARRISON ORTON demonstrated a method of localising foreign bodies embedded in the tissues. It was an adaptation of the triangulation method, and he had first used it several years ago. He thought that there was no difficulty for the operation to be done directly on the X ray table, a small sterilisable screen being employed. He exhibited several prints showing injuries to bone produced by rifle bullets.

Mr. S. GILBERT SCOTT spoke of the diagnosis of necrosed splinters of bone. Such sequestra, he said, were of two kinds, the one soft, poor in lime salts and consequently giving a faint shadow; the other hard, denser, with a heavier shadow. The detection of such splinters depended chiefly upon the surrounding shadow—i.e., upon whether the splinter was lying in normal bone, sclerosed bone, rarefied bone, in a suppurative focus, or in soft tissue, &c. The necrosed splinters could only be demonstrated if there was a sufficient contrast between their shadows and that of the tissue in which they lay. Rarefaction could often be seen in bone at some distance from the injury, but from its distribution did not appear to indicate merely atrophy from disuse. Mr. Scott also exhibited slides illustrating some curious effects on bones produced by modern projectiles.

Dr. STANLEY MELVILLE said that two questions were commonly referred to the radiologist. He was asked (1) whether a foreign body was present; and (2) as to its nature. He was also required to give its approximate anatomical relationships. Further details in localisation

were only occasionally wanted. The most careful localisation as to depth from the surface, &c., might be upset unless the surgeon had determined where he intended to make the incision before the localisation was attempted. He had come to rely more and more upon the help obtained from stereoscopic radiograms. He exhibited a special stereoscopic frame which had the advantage of easy portability.

Mr. E. W. H. SHENTON thought that much of the apparatus which had been devised had become too complicated. The use of a negative at the time of the operation together with a sterilisable graduated scale was a simple and often very effective method. He had devised a probe for the detection of foreign bodies which sterilised itself after introduction into the tissues.

The PRESIDENT said that it had occurred to him during the discussion that the radiologist was disposed to dictate whether a foreign body should or should not be removed. This was a position which could not be conceded by the surgeon. He had come to realise that all accessible foreign bodies which could be localised accurately should be removed. Clinical experience must always play a part in their localisation. The rarefaction of bone referred to by Mr. Scott was explained by sepsis.

Mr. V. W. LOW said that any one particular method could not be relied upon under all circumstances. For foreign bodies near the surface he thought that the exact methods giving their depths were very useful; but when the foreign body lay in the deeper parts it was more important to know its relation to anatomical structures than its exact distance from the surface. He agreed as to the value of stereoscopic methods under such circumstances.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF MEDICINE.

Exhibition of Case.—Radium Therapy in Uterine Cancer.

A MEETING of this section was held on Feb. 5th, Dr. WALTER SMITH being in the chair.

Dr. T. P. C. KIRKPATRICK showed a boy suffering from a condition which was described as Lupus Pernio. The patient was affected for three years with sore hands, sore ears, and at one time had a similar affection of his face. The hands were said to be a great deal better now, but there was still much thickening, swelling, and ulceration. When first seen the condition of the hands was much more of the chilblain type, but the face had quite recovered except for some little scarring. He was treated with emollients, and the hands were kept wrapped up.—Dr. WALTER SMITH found fault with the nomenclature, and said the name lupus should only be used when the condition was tuberculous.

Sir JOHN W. MOORE related a case of a married woman, aged 65, admitted to the Meath Hospital in October, 1914, suffering from various symptoms attributable to the alimentary tract, as well as from uterine pain, discharge, and hæmorrhage. The condition of uterine cancer was recognised and pronounced inoperable by Dr. F. W. Kidd. In conjunction with Dr. W. C. Stevenson, Sir John Moore had the tumour treated with radium emanations from Oct. 23rd to Dec. 29th, an average of 20 millicuries being given for 13½ days. During all this time she had six old capillary tubes in a little metal case inserted into the cervical canal. They contained an average of 4·17 millicuries. She received altogether 6602 milligramme hours of radiation. Six needles were inserted 11 times, 24 each into the anterior and posterior lip of the cervix and fornix and 18 into the vaginal wall. Posterior fornix and lip of cervix, treated for 4 days 21 hours, received 1872 milligramme hours—average 16 millicuries. Anterior fornix and lip of cervix, treated for 6 days 12 hours, received 2162 milligramme hours—average 13·8 millicuries. Vagina, treated for 4 days 4 hours, received 1218 milligramme hours—average 8·1 millicuries. Cervical canal and uterus, treated for 13 days 6 hours, received 1350 milligramme hours—average 4·1 millicuries per hour. The constitutional febrile disturbance which followed the various séances was noteworthy. The patient left the hospital considering herself cured. There was certainly remarkable shrinking in the growth; the pain and hæmorrhage and foul discharge had ceased, and the patient's general condition was excellent.—Dr. C. M. O'BRIEN said the whole virtue of radium depended on the action of radium emanation on the cancer cells and also on the stimulation of the connective tissue cells. He recalled a case of his which was treated in 1906 for epithelioma of the right cheek, which was looked upon as cured and remained well for six years, and at the end of that time the patient returned with large infiltrating glands absolutely inoperable from the surgical standpoint.—Dr. W. M. CROFTON said that one would think that radium would produce a local effect only on the cancer, but it appeared that there was always a general reaction, and he suggested that part of this was due to the absorption of the cancer cell into the circulation, so that not only might the radium act as a destructor of the cancer cells, but it might lead to a certain amount of immunity.—Dr. W. G. HARVEY said Dr. Crofton's point should not be lost sight of. He found that when a tumour in a mouse disappeared after treatment with X rays it was almost impossible to reinfect that mouse with cancer. From that he considered that the absorption of the cancer did produce some kind of protective bodies.—Mr. SPENCER SHEILL said if it was assumed that the diagnosis was correct without microscopic examination, Sir John Moore was to be congratulated. If nothing more than the cessation of pain and apparent improvement had been achieved, that was still a distinct gain.—Dr. SMITH said the physics of radium was a complicated subject, and the question of its physiological action, which was of greater interest, was still more complicated. It seemed to him that the most fundamental thing in radio-activity was that it was a branch of phototherapy, and might be brought into line with Finsen light. He suggested that it was a photo-electrical treatment influenced largely by the wave-length of the light and possibly acting on the tissue. He suggested that in all those radio-active elements there might be a stimulant action; hence the possibility of too feeble an application of radium stimulating cancerous growths.

SECTION OF SURGERY.

Exhibition of Cases.—The Theory and Technique of a New Method of Radium Therapy.

A MEETING of this section was held on Jan. 29th, Mr. F. CONWAY DWYER, the President, being in the chair.

Mr. M. R. J. HAYES showed a man, aged 45 years, part of whose tongue was removed two years ago last June by Mr. S. S. Pringle for malignant disease. Mr. Pringle intended later to remove some enlarged glands in the neck, but the patient would not permit this. The tumour increased in size, and last autumn the patient came to the dispensary of the Mater Misericordiæ Hospital and it was decided to try radium emanations. When the patient was first treated by radium in the middle of December there was a swelling on the side of the neck about the size of a goose egg, soft about the centre, and apparently breaking down. Three needles were inserted from above downwards and three from below upwards and left in for 24 hours, when they were reinserted at right angles to the former positions. They were again inserted in a position which might have escaped radiation in the previous two insertions. There was no general reaction, but a slight local one. When the needles were withdrawn there was no hæmorrhage, and from that time the patient showed improvement. After Christmas the tumour was only half of its original size. Another insertion on Jan. 13th was tolerated for only a few hours. There is vast improvement. The primary growth was in the tongue. The submaxillary gland was at no time involved. The swelling now is only one-third of the original size.

Mr. R. C. B. MAUNSELL showed a man, aged 61, treated for Cancer of the Tongue by Radium Emanations. In April, 1913, the patient first noticed a lump under the tongue to the left of the frænum, which gradually increased, and ulcerated rapidly and spread. When first seen the man looked cachectic. There was ulceration of the left side of the middle third of the tongue, and a large ulcer under the tongue which destroyed the frænum. Considerable pain and enlarged glands on the left side but none on the right. A piece of the growth removed for examination, and reported on as a rapidly growing carcinoma. Radium was inserted Dec. 2nd. The position in which

the six needles were placed and the method adopted for fastening them were demonstrated. The only reaction was a rise in temperature to 100° F. Within a few hours the pain was relieved. The needles were left in for 23½ hours and inserted next day into the submaxillary gland, and the following day reinserted in the mouth. The treatment was then stopped awhile. On Dec. 24th the cancerous ulcer was completely covered with epithelium. The teeth were then extracted and 24 millicuries of radium again inserted, and the patient went home for three weeks. On his return he was in good spirits and greatly improved in general health. Since then the neck was radiated as a prophylactic. Glands were to be felt in the right side of the neck when he came back. An interesting point was that when a piece of the healed former cancerous growth was examined it was found to be covered over with practically normal epithelium, underneath which was a lot of fibrous tissue, and in one part of the section a mass of carcinomatous cells was to be seen, but there was no mitosis. There were a few giant cells. The point of interest was that although clinically the ulcer had healed over with epithelium there were still carcinomatous cells. Two sections were shown.

Mr. MAUNSELL also showed a patient suffering from Primary Cancer of the Neck under Radium Treatment, the interesting point being that the patient had a reaction each radiation, whereas the other patient shown had not.

Mr. WALTER C. STEVENSON brought forward four cases treated by Radium Emanation Needles. The first case was that of a man who had been shown two months previously. He had 13 radiations of six needles. The growth was considered to be a sarcoma. The opinion was expressed that sarcoma did better than carcinoma under radium treatment. The second and third cases affected the tonsils. The fourth patient had a tumour of considerable size on the face. He was X rayed about six years ago. Radium was tried, and the lump which was there had disappeared. The lump was considered to be an epithelioma following X ray treatment for lupus.

Mr. STEVENSON also read a paper on the Theory and Technique of a New Method of Radium Treatment by means of fine serum needles containing up to 5 millicuries of radium emanation in fine glass capillaries, as supplied by the Royal Dublin Society. He pointed out that the filtering off of soft rays, both in X ray and radium therapy, was simply a method of obtaining uniformity of radiation, as if the soft rays from an X ray tube or from radium, whether applied on the surface or buried in a tumour in the ordinary way, were not filtered off, there would be over-exposure and injury to the skin or tissues in the immediate neighbourhood of the source of radiation. By employing a number of sources of radiation, or illumination, as suggested by Professor Joly, in needles inserted within soft ray range of one another, uniformity of radiation was obtained with the minimum of filtering. The fineness of the needles permitted of their being withdrawn and reinserted in intermediate position for greater uniformity, allowed the growing edge of the tumour to be systematically dealt with, and, most important, increased the therapeutic value of a given quantity of radium, as the soft rays, which were the most numerous and therapeutically effective, were not wasted. It was not soft rays but over-exposure from soft rays that did the harm. Mr. Stevenson showed four patients and lantern slides of some other of the 22 cases of inoperable malignant disease treated since April 1st, 1914. He never was able to procure more than 24 millicuries of emanation at one time. The cases treated included malignant disease of the tonsil, tongue, and pharynx (3); floor of mouth, cervix and vagina (4); breast (2); glands in the neck (2); abdominal tumour. Six needles at a time were inserted into the tumour. All the cases in which this method was used proved that the treatment might be safely employed with marked benefit to the patients, some of whom were enabled to return to work.—The PRESIDENT said the paper opened up a subject which was only in its infancy, and every contribution to it was of great importance. He had no practical experience of the treatment.—Dr. O'BRIEN suggested the advisability of bringing the cases exhibited before the section from time to time in order that the success or otherwise of the treatment might be followed. The therapeutic use of radium entirely depended on its destructive power on cancer cells. There was no class of case more discouraging as regards cure or treatment than those shown that evening. He thought the method described open to the objection that a cancerous growth being penetrated the patient might be exposed to the risk of the dissemination of cancer cells, though in a lesser degree than in any other method he knew of.—Professor E. J. MCWEENEY said, as a member of the committee of the Royal Dublin Society, entrusted with procuring a supply of radium, he took a deep interest in the results, and by arrangement with Mr. Stevenson he had obtained specimens of the growths. Four or five of them were typical squamous epitheliomata, and others were sarcomata. There could be no doubt as to the malignancy of the growths; he considered that they would have caused the deaths of the patients speedily. He had not yet had an opportunity of examining them histologically after radium, but he had seen two microscopic sections cut from Mr. Maunsell's case, and they showed a most remarkable change. While further results must be awaited before passing judgment, the results showed clearly that a great amount of suffering had been alleviated by the treatment. The present contribution by Mr. Stevenson constituted a distinct advance in the surgical technique of the treatment of cancer carried out by these tubes with a small amount of emanation in each. He wished to acknowledge the great technical skill placed at their disposal by Mr. Moss, who devised the method of condensing the emanations at the temperature of liquid air and having it sealed up in these tubes in determined quantities.—Mr. HAYES said the instructions stipulating that the supply of radium emanations should be used for the particular patient for whom it was obtained, and not for any other case, caused a great amount of emanation to be lost, and he suggested that if the society could make some arrangement by which this waste of emanation could be utilised in other cases it would be an advantage. There was one matter which he considered they should be definite about. In X ray therapy dosage had been definitely settled, and it was just as well to realise that radium in ignorant hands was dangerous. He strongly urged the absolute necessity of fixing definitely what the dose should be in millicurie minutes. He doubted if there was any danger of dissemination of cancerous cells by the introduction of the needles into the growth, as the destruction in the tumour itself was relatively small; and, moreover, he believed that as a result of the immediate effect of the radium emanation occlusion of the lymph channels took place. He considered that there was not one of the cases shown that would not have died within a few months had they not undergone the treatment.—The paper was discussed also by Mr. W. I. DE C. WHEELER, Mr. MURPHY, Mr. MAUNSELL, and Mr. A. J. MCA. BLAYNEY, and Mr. STEVENSON replied.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.—A quarterly meeting of this association was held at the rooms of the Medical Society of London on Feb. 18th, Dr. David G. Thomson, the President, being in the chair.—Mr. Roy M. Stewart (Prestwich Asylum) read a paper, illustrated by photomicrographs, on Meningo-Vascular Syphilis. It was devoted to the consideration of a single case, whose morbid anatomy afforded a striking example of the effects of the syphilitic virus on the supporting, enclosing, and vascular structure of the central nervous system; also to setting forth the retro-olivary syndrome dependent upon thrombosis of the posterior inferior cerebellar artery which the patient exhibited. As a brain might show both interstitial and parenchymatous change difficulties of diagnosis might arise, as there was no sign or symptom in dementia paralytica which could not be present in subacute meningo-vascular syphilis, and except for the Wassermann reaction one could not be certain whether a lesion was entirely parenchymatous. The patient who formed the subject of the communication was an unmarried woman, aged 47, who was in the asylum 17 months. She was anæmic and in poor physical condition. Near the right knee were scars of a syphilitic character. Her pupil reaction and reflexes were normal, but soon after admission there was ptosis on the left side. Mentally she was deluded and excited, believing that people were following her about to injure her. Speech was incoherent. During the

succeeding months there was progressive mental deterioration; she became restless, destructive, faulty in her habits, and was disorientated. Eleven months after admission she had a slight seizure affecting the left side of the face and right upper extremity, and subsequently a number of such; she also complained of failure of vision in the left eye. Speech was slurring and she had facial tremor. Three months before death she became bedridden and showed a powerful disturbance of memory. Two days before death she had a convulsion and symptoms of acute bulbar paralysis. She remained to the last conscious of her mental and physical disabilities. The whole picture was one of diffuse cerebral syphilis. At the necropsy the brain showed slight general atrophy. The pia-arachnoid was slightly thickened and milky along the frontal sulci, which were widened. There were gross macroscopic lesions and recent softenings on both hemispheres. On making a horizontal section in Marie's plane several remarkable cavitations were seen in the white matter of ¼ cm. to 4 cm. in depth. The cerebral vessels were tortuous and very atheromatous. In the spinal cord there was a disappearance of many nerve fibres from all parts of the section. The lateral columns suffered especially, and there was a great increase in glial fibres. The myeline sheaths showed every gradation of change, from slight loss of myeline to complete disintegration. The pia mater investing the cord had undergone very great thickening and showed an intense cellular infiltration. Perivascular change was observed around all the large vessels, there was slight intimal proliferation in the arteries, and many of the veins showed engorgement and hyaline thrombosis The nerve cells showed atrophic pigmentary degeneration. Mr. Stewart then gave a demonstration of the microscopical findings in the case, and remarked that, in regard to the optic nerves, a very large number of funiculi, especially those at the periphery, exhibited sclerosis. Their nerve fibres had largely disappeared and were no longer stained by Weigert's method. Large branching strands of neuroglia fibres could be seen passing among the nerve bundles. The symptom complex to which he wished to direct attention was as follows: Sudden onset, without loss of consciousness; giddiness, hemiataxia with tendency to fall to the affected side; difficulty in deglutition, phonation, and appreciation of pain, heat, and cold over part or the whole of the trigeminal area on the side of the lesion, and a corresponding loss of pain and temperature sense on the opposite side of the body from the face downwards; motor power, touch, tactile discrimination, deep pressure, and muscular sense were intact; paralysis of ocular sympathetic on the side of the lesion. It was clearly a case of crossed dissociated anæsthesia. He discussed the microscopic findings at length, and showed photographs.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—A meeting of this society was held on Feb. 12th. Mr. Herbert Jones, the President, being in the chair.—Professor Sims Woodhead read a paper on the Best Way in which Civil Health Officers can give Assistance to the Military Authorities in Time of Mobilisation or of War, and said that the Local Government Board, knowing the value of the experience of medical officers of health, early recognised that their help might be of enormous value to the military authorities, and soon after the outbreak of war sent out a series of circulars to both sanitary bodies, civil and military, inviting the confidence of one and placing the services of the other at the disposal of the military authorities. The chief features essential for the smooth working of the civil and military authorities side by side were a free interchange of information and ideas, which could only be effected where there was a readiness to help; avoidance of bones of contention, which could only be done by a willingness to delimit spheres of observation as far as possible and by accepting without cavil or mistrust slight invasions of those spheres; subjection of official interests to the general convenience; and mutual trust and forbearance. The medical officer of health could exert little or no control over meat supplies or food supplies of any kind. The inspection of rations must be left entirely to the company officers and to the Royal Army Medical Corps Sanitary Service. The military authorities, although nominally applying to the police for information concerning open spaces in which camps might be erected, were to a very large extent dependent upon information that could only be supplied to them by the medical officer of health. He could keep them posted as to the places to be avoided. He had a knowledge of the character of the population, of the localities in which undesirables of both sexes were concentrated, the type and efficiency of the sewage and drainage of an area, the character of the soil, and the facilities for obtaining water and for the disposal of camp refuse. The military authorities must be entirely dependent upon the medical officer of health for information that was vital to the success of their efforts to keep the troops healthy, and they must rely upon him for accommodation of their fever patients in his isolation hospital. Referring to cerebro-spinal meningitis, he expressed the opinion that the disease was associated essentially with overcrowding and bad ventilation, and that the latter rather than the former was the determining factor; that it was no longer a jail fever, in civilised countries at any rate, as jails were now as well ventilated as dwelling houses; and that it was a disease of the barracks and not of the open camp, though when weather was bad and tents good the conditions for its development even under canvas were not wanting. An outbreak of the disease would be got rid of by thorough ventilation of the military huts. This was of far greater importance than isolation.—Dr. J. S. Tew said that he was able to supply the military authorities on the outbreak of war with a complete plan of all the water mains in his districts and to indicate the locality of wells. He referred to the importance of cheap bathing facilities for soldiers and of adequate means of disinfection.—Dr. Veitch Clark said that in Croydon an enormous amount of disinfecting had been done by the corporation free of charge, and that some public baths had been given up entirely to the soldiers on payment by the military authorities of a weekly sum equal to the average takings. He considered that much good had been done by making out of bounds certain streets in which infectious diseases were prevalent.—Dr. A. W. J. MacFadden referred to the excellent work that was being done by medical officers of health, at the instance of the Local Government Board, in the examination of the food-supplies of the army. He knew that the War Office was aware of the services of medical officers of health in this direction.—Mr. T. W. N. Barlow regretted that the military authorities did not always seek to coöperate with the medical officer of health, whose advice was not invariably followed.—Dr. R. A. Lyster, Dr. A. H. Bygott, Dr. C. Sanders, and the President also took part in the discussion.

ÆSCULAPIAN SOCIETY.—A meeting of this society was held in the Metropolitan Hospital on Feb. 19th, Dr. David Ross, a past President, being in the chair.—Dr. Philip Hamill conducted a clinical demonstration.—Dr. Edmund Cautley showed: 1. A girl, aged 15 years, who though looking well and having no pains or fever, had a Diastolic Murmur at the Base of the Heart conducted to the right side of the sternum. The point of maximum intensity was in the second and third left interspaces. A skiagram showed hypertrophy of the right ventricle.—A discussion followed, in which Dr. Leonard Williams, Dr. Hamill, Dr. A. Feiling, and Dr. H. E. Symes-Thompson joined, and it was ultimately agreed that the case was one of pulmonary regurgitation. 2. A boy, aged 9 years, with Subaortic Stenosis.—Dr. Hamill showed (for Mr. Dive and on his own account): 1. A boy, aged 8 years, with Pulmonary Stenosis. 2. A man, aged 28 years, with Pulmonary Stenosis and Tricuspid Regurgitation. 3. A girl, aged 9 years, with Pulmonary Stenosis and Patent Ductus Arteriosus with marked Cyanosis. 4. A girl, aged 11 years, with Patent Ductus Arteriosus, who suffers from epileptiform seizures. 5. A girl, aged 18 years, with Pulmonary Stenosis and Patent Foramen Ovale (? Defective Ventricular Septum), marked Cyanosis, and Clubbed Fingers. 6. A girl, aged 12 years, with Complete Transposition of Viscera. 7. A man, aged 20 years, with Transposition of Heart only, Stenosis of Ostium, and probably a Defective Auricular Septum. 8. A man, aged 34 years, with Heart drawn over to the right side by Fibrosed Right Lung. 9. A youth, aged 15 years, with Mitral Stenosis and marked Clubbing of the Fingers. 10. A woman, aged 30 years, with Chronic Inflammation of Both Submaxillary Ducts who spontaneously passed a salivary calculus.—Mr. Henry Curtis showed a specimen removed from a case of Multiple Urethral Fistula, one in the right groin and three in the perineum, in a West Indian Negro.

Reviews and Notices of Books.

The Extra Pharmacopœia of Martindale and Westcott.

Revised by W. HARRISON MARTINDALE, Ph.D., F.C.S., and W. WYNN WESTCOTT, M.B. Lond., D.P.H. Sixteenth edition. In two volumes. London: H. K. Lewis. 1915. Vol. I., pp. xl. + 1113, price 14*s.* net; Vol. II., pp. viii. + 469, price 7*s.* net.

SINCE the publication of the last edition barely three years ago a very considerable amount of attention has been directed to different topics which are dealt with in these volumes. The revision has entailed drastic excision of many details to make room for more recent information and for somewhat lengthy reports of many matters connected with proprietary medicines. The first volume is that which will be most frequently consulted by medical men, and it certainly succeeds in supplying concise accounts of current expressions of opinion on the trend of therapeutics. The second volume is intended as a supplement for further study, and deals mainly with the results of analytical or experimental investigations. The references to the new British Pharmacopœia are necessarily very numerous, though the compilers save much space by frequently indicating, by the abbreviation "Off." the advisability of looking elsewhere for further information regarding official requirements. The remarks on the metric system in the present edition will come as a surprise to those who remember the whole-hearted recommendations of former editions, in which it was advocated as entailing far less mental calculation and therefore very much less likelihood of error. It appears a little inconsistent to advocate uniformity in nomenclature at the top of the page, and a little lower down to state that though the word "mil" is now adopted officially, the use of "cubic centimetre" with the contraction cc. is retained throughout these volumes.

Among the more important new features we find, alphabetically arranged in the preface, brief references to all that is newest in the domain of therapeutics, together with a few useful indications of the lack of satisfaction expressed about some measures which, until recently, had met with wide acceptance. These pages are extremely instructive, although they often suggest the idea that many of the vaunted remedies of recent introduction may have an ephemeral existence. It is evident, however, that the compilers of the Extra Pharmacopœia are fully alive to this, and that, not content with merely making an abstract of current literature, they initiate independent investigations to test the validity of the claims made on behalf of new remedies, and have not hesitated to add to the list of new aspirants for favour. For example, having found certain objections to cod-liver oil, they suggest the use of poppy-seed oil as a suitable substitute, and quote clinical observations in its favour. Many busy men will be grateful for the amount of space devoted to radiology, to radium, and to radioactive waters, since it is difficult elsewhere to find so much information in so compact a form. The same remark is equally applicable to the sections on vaccines, on tuberculin treatment, and on organotherapy.

In the second volume there is greater scope for dealing critically with the new British Pharmacopœia, and although some strong remarks are made about the absence of a standard for dried thyroid gland, it is evident that most of the official analytical processes and methods of extraction meet with approval. It is somewhat difficult to criticise this volume owing to the multiplicity of subjects included and to the strange order in which they are placed. Each section, viewed by itself, affords a vast amount of instructive and suggestive information, but the sections succeed each other with a bewildering lack of connexion, and occasionally some seem to have strayed from their proper logical position. Thus in rapid succession we pass from animal organotherapy to sterilisation, then to synthetic notes on physiological effect in comparison with chemical constitution; from this to physiological standardisation, and then to proprietary medicines and their approximate composition. The last-named section gives a very fair précis of some of the evidence taken by the Select Committee appointed to inquire into the conditions prevailing in the United Kingdom regarding the sale of patent and proprietary medicines, to which is appended a list of proprietary medicines, with a moderate amount of information of their composition, culled from various sources. From this list it is evident that the composition of some has been altered from time to time; it is also clear that no information is forthcoming with regard to certain largely advertised proprietary preparations. The authors remark that the various scientific journals do not give a complete report of all the evidence given before the Select Committee, and they have clearly done their best to make good the deficiencies. The notes on the antiseptic power of numerous chemical and disinfectant preparations have been very carefully revised, and include records of the results obtained by numerous independent observers. Many of the experiments have been conducted by one of the authors, and in tabular form the germicidal action of those of practical value is clearly set forth. The analytical memoranda relating to the examination of urine, blood, fæces, &c., have been brought up to date by the inclusion of many new tests and by useful summaries of recent discussions, while the bacteriological notes supply considerable detail which will be sure to be frequently referred to by those engaged in this branch of special laboratory work.

Sufficient has been said to warrant the conclusion that this new edition is likely to receive the same welcome afforded to its forerunners. Notwithstanding the vast amount of information afforded, the clearness of the type and the use of thin paper have enabled the production of two volumes of convenient size and agreeable appearance. Those engaged on the revision are to be congratulated on having produced a work of great utility.

Mentally Defective Children.

By ALFRED BINET and TH. SIMON. Authorised translation by W. B. DRUMMOND, M.B., F.R.C.P. Edin. London: Edward Arnold. 1914. Pp. 179. Price 2*s.* 6*d.* net.

WE are glad to welcome this useful translation of the work of M. Binet and M. Simon. The care and education of the feeble-minded have in recent years been brought much to the fore as a matter of pædagogical, social, and medical interest. Volumes have been written, an immense amount of work has been accomplished, and a few results have been attained. So great has been the enthusiasm in certain quarters that there has seemed almost a

danger of the child being lost sight of in the multitude of tests and other psychological experiments to which it might appear he was about to be subjected.

The great merit of Binet and Simon's book has always seemed to us that it has focused the attention of those who have to do with the education of the feeble-minded upon practical inquiries as to when a child is to be considered feeble-minded, to what extent it may be expected that good results will arise from education, and in which cases a large outlay of patience, money, and time is justifiable. The Binet-Simon tests have now a world-wide reputation, which they have merited on account of their simplicity, practicability, and usefulness. Their use will, we scarcely doubt, be widespread, and upon them will be based a classification of the feeble-minded which, from the pædagogical point of view, will be of great value.

The translation has, we consider, been particularly well done, and while the English is excellent the style retains the incisive nervous qualities of the original French.

Infection and Resistance: An Exposition of the Biological Phenomena Underlying the Occurrence of Infection and the Recovery of the Body from Infectious Disease.

By HANS ZINSSER, M.D., Professor of Bacteriology at the College of Physicians and Surgeons, Columbia University, &c. With a chapter on Colloids and Colloidal Reactions by Professor STEWART W. YOUNG, Department of Chemistry, Stanford University. New York: The Macmillan Company. 1914. Pp. 546. Price 15*s.* net.

SO many books dealing with the subject of immunity have recently seen the light that we are inclined to view any newcomer in this field with suspicion, but the present volume has quite definite merits of its own. It gives a clear account of the phenomena of immunity, written largely from the historical point of view, enabling the reader to follow to some extent the gradual development of knowledge. He is thus led to take an intelligent interest in the subject, and to appreciate the fact that accepted doctrines at this, as at earlier periods are provisional and subject to continuous modification with the growth of experience. References are given to the original papers quoted, a feature which adds considerably to the value of the book.

With regard to the plan of the book, the first chapter deals with the virulence of organisms, and the second with the nature of bacterial poisons. Chapters III. and IV. treat of the forms and mechanism of immunity, and Chapter V. of the relations of toxin and antitoxin. In Chapter VI. we are introduced to the phenomena of bacteriolysis and cytolysis, and the two following chapters deal with complement and its fixation. Chapters IX. and X. are devoted to agglutination and precipitation respectively, while the following four discuss phagocytosis and its relations to vaccine therapeutics and to opsonic determinations. Chapters XV. to XVIII. are devoted to anaphylaxis and the clinical conditions connected with it, while Chapter XIX. deals at some length with serum treatment and prophylactic inoculation. Some account is given in Chapter XX. of Abderhalden's protective ferments, and the concluding chapter contains Professor Young's epitome of our existing knowledge of the properties of colloids—a subject intimately connected with the reactions concerned in immunity. We could indeed have wished that this last chapter had been even longer and fuller, but for its presence at all we may be duly thankful.

The volume is intended for the use of students of medicine, and we hope it will find many readers among them, as in the form here adopted it affords better mental pabulum than more dogmatic text-books and other forms of pre-digested matter which are too commonly relied upon in these times of continual examinations and general educational haste.

Food Products.

By HENRY C. SHERMAN, Ph.D., Professor of Food Chemistry, Columbia University. New York: The Macmillan Company. 1914. Pp. 594. Price 10*s.* net.

THIS is a useful book giving considerable information upon the production and preparation of food and food products. Indications are given as to the relative economic importance of the industries concerned, and a valuable feature of the book appears in a section on the special characteristics of composition, digestibility, nutritive value, and place in the diet of all known foods. The analyses given are abundant, and form a useful reference. The literature quoted is extensive.

The sections on the administrative control of food supplies are of course based on the provisions of the laws of the United States. This does not detract from the value of the author's treatment of general considerations or from his account of industrial methods.

The Sale of Food and Drugs Acts, 1875 to 1907, and Forms, Regulations, Orders, and Notices Issued thereunder, with Notes and Cases.

By the late Sir WILLIAM J. BELL, LL.D., Barrister-at-Law. Sixth edition, by CHARLES F. LLOYD, Barrister-at-Law; the Chemical Notes revised and enlarged by R. A. ROBINSON, Barrister-at-Law. London: Butterworth and Co. and Shaw and Sons. 1914. Pp. xxxix. + 310 + 46. Price 8*s.* 6*d.* net.

LET us say at once that Mr. Robinson's useful notes upon the points likely to arise and to be submitted to the analyst in connexion with prosecutions for adulteration have been added to with advantage and placed in a more convenient position in this edition than in its predecessor. The present volume constitutes the sixth issue of "Bell's Sale of Food and Drugs Acts," and for the first time the original editor's name is prefixed with the words "the late." Mr. Lloyd and Mr. Robinson were already responsible, however, for the fifth edition issued in 1910. Not a great deal of legislation has occurred since that date to swell the bulk of the present volume, and Mr. Lloyd is to be congratulated upon having been able to keep its dimensions in check by omissions of practically obsolete matter which is not likely to be missed. The only serious legislative addition which he has had to insert is the Milk and Dairies Act, 1914, and in making reference to other new statutes he has only chronicled a doubt as to who is to be deemed the purchaser of drugs under the National Insurance Act, the committee or the patient, and noted the effect of the Forgery Act, 1912, upon proceedings in respect of forged certificates and warranties, where these have hitherto been regulated by Section 27 of the Food and Drugs Act, 1875. Otherwise recent cases and decisions have afforded the principal matter for editorial consideration.

We may note that the ingenuity of the inventor has found scope since the last edition in the adulteration of margarine with paraffin. Observations upon this subject are to be found in a memorandum of the Local Government Board, a number of circular letters from Government departments having been included in the appendix to the present issue. These, together with forms of information and summons, should be found convenient additions to a volume which for some time has been recognised as a useful text-book.

LIBRARY TABLE.

The Passing of Vesalius. By G. MATHESON CULLEN, M.D., B.Sc. Edin. Reprinted from the *Edinburgh Medical Journal*, November, 1914.—Dr. Cullen, in his small monograph on "The Passing of Vesalius," has made a minute examination of the original sources of information, and has endeavoured in the true historical spirit and method to appraise impartially the value to be assigned to each authority. The most important of these, because that upon which the prevailing view is based, is a letter alleged to have been written in 1565, the year following the death of Vesalius, by Languetus to his friend Casper Peucer, physician and son-in-law to Melancthon, wherein the story is found that the Spanish Inquisition satisfied its enmity against Vesalius by a charge of impiety, for his (alleged) opening of the body of a Spanish nobleman to ascertain the cause of death, when the heart was found to be still beating. For this, it is stated, the Inquisition determined to sentence him to death, but at the entreaty of the king changed the sentence to an expiatory pilgrimage to Palestine and Mount Sinai. Nothing appears to have been known of the version contained in this letter, however, until Melchior Adam published it in 1620, in his *Vitæ Germanorum Medicorum*. Even then it failed of credence until Boerhaave and Albinus accepted and republished it in 1725, when it became more or less generally adopted. But Languetus speaks of it only as a tale he had heard from Spain, without even referring to his authority. Beyond a vague statement by Paré there appears no other evidence in support of the alleged "vivisection." As to the interference of the Inquisition Languetus stands alone, and in view of the prevalent animosity against that body, it seems incredible, as Dr. Cullen points out, that had the charge been true it should not have gained currency in the copious polemical literature of the time, for several of Vesalius's friends were of the anti-Spanish and Protestant party; his widow's brother-in-law by her subsequent remarriage was a partisan of William of Orange; Languetus himself was the accredited agent of Augustus Elector of Saxony; the friends of the nobleman in question remained silent on the subject; and lastly, in spite of the Inquisition's well-known punctiliousness in recording minutes of their judicial proceedings, there is no trace to be found of any official record concerning it. Dr. Cullen seems, therefore, to be quite within the bounds of probability in concluding that the story is a forgery fathered on Languetus.

Other reasons that have been assigned for the pilgrimage are a wager (Metellus, 1565), the enmity of the Galenists (Argentarius), a vow for recovery from sickness (Clusius, 1564, Solenander, 1566, but not printed until 1722, Dudith, 1582, who explicitly denies that Vesalius was exiled), and a desire to visit the holy places on a pilgrimage from religious motives (Pantaleon, 1565, Zuinger, 1586, Thuanus, "for his soul's sake," 1606, Miræus, 1609, Melchior Adam, 1620, and Sweertius, 1628). Dr. Cullen passes all these authorities under careful review, and, as it seems to us, makes out a good case for the conclusion that there is no reason to suppose that Vesalius was other than a sincere Christian believer, and that the reason he left Spain was "that in consequence of a vow he was anxious to obtain the merit of making a pilgrimage to the places which had been hallowed by the living presence of our Saviour."

Vade Mecum for the Use of Officers and Interpreters in the Present Campaign. By EUGENE PLUMON. New edition. London and Paris: Hachette et Cie. 1914. Pp. 134. Price 2 francs.—This is a manual that can be easily carried in a breast pocket, and within the limits that the author has chosen contains all the technical terms likely to be required in intercommunication between our troops and their Allies, as well as ordinary useful words, arranged according to subjects. It is not a conversation manual, but a classified vocabulary of military, topographical, and engineering terms and expressions. The definition of military terms is not always quite accurate: "accoutrements" do not include "arms," which are certainly part of "a soldier's outfit"; the definition of "echelon," as given, is incomplete and erroneous; that of "interval" substitutes "of" for "or," which makes it meaningless. There is, however, a very useful selection of words in the two languages, which makes the book useful and handy.

The Practitioner's Guide to Clinical Research: Alphabetically arranged in Sections. Published by the Clinical Research Association, Limited, Watergate House, York Buildings, Adelphi, London, W.C. Pp. 149 + xlix.—This little book is doubtless primarily intended for the use of members of the Clinical Research Association, containing as it does advice on the subjects suitable for laboratory assistance and the scale of fees payable for such aid. Nevertheless, it is also of interest to the general reader as showing at a glance the present state of knowledge in the field of applied pathology—a field which has grown enormously in recent years and is constantly extending. As examples of such recent extension we may note the complement-fixation tests for glanders and for hydatid disease here described. The methods of collecting blood and other materials for examination are also explained—a further useful feature.

The Mental Health of the School Child. By J. E. WALLACE WALLIN. London: Humphrey Milford. Oxford University Press. New Haven: Yale University Press. 1914. Pp. 462. Price 8*s.* 6*d.* net.—This book consists of a collection of papers and addresses written to advocate the support and foundation of "psycho-educational clinics" and as contributions to a "new science of orthophrenics and orthosomatics." Orthosomatics or physical orthogenesis is defined by the author as "any process through which malfunctioning physical organs may be made to function aright, or by means of which healthy organs may be continued at normal functioning so that the physical organism may develop to its maximal potential," and orthophrenics or mental orthogenesis as "any process, mental or physical, of righting any malfunctioning mental power so that the mind may reach its highest developmental

possibilities." The enrichment of our vocabulary proceeds apace, and those who regard the invention of a new term as an advance in knowledge will welcome these additions. The new problems presented by orthosomatics and orthophrenics are to be the subject-matter of "clinical psychology," the claims of which to recognition as an independent science are supported at length by the author. "The central aim of the psychological clinic is psychological diagnosis and consultation and advice in regard to mental cases, particularly children." The author occupies considerable space in support of theses such as these. His style is unfortunately somewhat diffuse, and this quality is accentuated by the repetition which he regards as unavoidable in the publication of a series of scattered studies dealing with closely related topics.

The B.D.H. Guide to the British Pharmacopœia, 1914. London: The British Drug Houses, Limited. 1915. Pp. 175. Price 1s. net.—This is a very pleasant book, of convenient size, well printed, and clearly arranged. It is intended to save the time of those who might wish to compare the B.P., 1914, with that of 1898. Each monograph is mentioned in turn, and when changes of importance occur the fact is noted, the degree of importance being indicated by a single or double marginal line. Greater courage is displayed than in the parent volume, to which it is a guide, for the mystery surrounding new articles like barbitone and hexamine is dispelled, and we are plainly told that they have the same chemical composition as certain proprietary substances. The general commentary at the beginning of the book deserves careful study, otherwise the value of many brief statements may be missed; for example, the difference between "no change" and "no ostensible alteration." Although the compilers of this book show due regard for accuracy in all relating to the new Pharmacopœia, they are in error in stating that in 1898 æther was required to be prepared from *duty-paid* rectified spirit.

New Inventions.

VACCINE BOTTLES FOR HYPODERMIC SOLUTIONS.

IT is needless for me to claim any originality except for the application of Sir Almroth Wright's vaccine bottles for hypodermic medication. On the battlefield in particular, where morphia is the sheet anchor of the first-aid surgeon, such an arrangement of keeping the morphia solution would be a great advantage over the glass capsules or the compressed drugs.

In order to ensure as great a sterility in hypodermic medication as possible glass capsules, each containing single doses of a particular preparation, have been put on the market in place of the compressed drug. In practice the disadvantages attending these devices are: (1) The space the capsules occupy; (2) the fragility of the containers; (3) chances of accidental contamination in filing the capsule and breaking the neck thereof; (4) assistance required in holding the capsule while drawing the contents into the syringe; (5) the difficulty of obtaining the capsules in India (except in Presidency towns); and (6) the cost, especially in the treatment of malaria and in hospital practice, and even in general practice. To obviate these difficulties I am now using Sir Almroth Wright's rubber-capped vaccine bottles. In two months I used more than 100 doses from the vaccine bottles without having a single accident.

The method of preparing the solutions for hypodermic medication and putting them in the bottle, &c., is as follows: 1. Make the solution of the required alkaloidal salt in distilled water (e.g., 3 gr. of quinine bihydrochloride to 1 c.c. or even ½ c.c.) and filter. 2. Charge a thoroughly cleaned and sterilised vaccine bottle with the solution (1). Cap the bottle with a thick rubber cap. 3. Thrust a small section of hollow wire or a fine hypodermic needle through the cap near the edge to serve as an air vent. 4. Sterilise the bottle and contents in an autoclave. 5. After sterilisation and cooling pull out the wire or the needle and seal the hole with collodion. 6. Melt some hard paraffin and let it boil; then dip the rubber-capped neck of the bottle into the melted paraffin. This would prevent any possible leakage about the neck or top and also be a protective layer for the rubber cap (a great desideratum in the tropics).

The method of use is to sterilise the surface of the rubber cap by transferring to its surface a drop of undiluted lysol and then, turning the bottom of the bottle upwards, puncture through the rubber with the needle of a sterilised hypodermic syringe and withdraw the desired quantity of the solution. The hole seals itself and no collodion or re-paraffining is necessary, which is one of the advantages of such a cap.

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INFLUENZA IN BELFAST.—Our local correspondent states that there is a very widespread epidemic of influenza in Belfast at present, the main feature of which is the severe throat complications—acute follicular tonsillitis and laryngitis—and occasional gastric symptoms. Young people seem to be very susceptible.

ROYAL METEOROLOGICAL SOCIETY.—At a meeting of this society on Feb. 17th a paper on Observations of the Upper Atmosphere at Aberdeen by means of Pilot Balloons was submitted by Mr. A. E. M. Geddes. A paper from Mr. V. G. Anderson, of Melbourne University, was also read on the Influence of Weather Conditions upon the Amounts of Nitric Acid and of Nitrous Acid in the Rainfall at Melbourne, Australia. The author described the methods adopted and stated that the results of the daily determinations from Nov. 1st, 1912, to Feb. 28th, 1914, when correlated with the meteorological data, for Melbourne and the isobaric charts for Australia, reveal the existence of a relation between weather conditions and the amounts of the nitrogen acids in the rainfall. The concentration of nitric acid reached a maximum in summer, a minimum in winter, and an intermediate position in autumn and spring. The concentration of nitrous acid reached a maximum in winter and a minimum in summer. Nine well-defined recurring types of rainstorms have been investigated, the amounts (pounds per 1000 acres) of oxidised nitrogen per day varying from 1·5 in the case of certain antarctic storms to 35·0 in the case of intense tropical storms.

DELAY IN NOTIFYING TUBERCULOSIS. — At Houghton-le-Spring (county Durham) police court recently Mr. W. H. Condell was summoned under the Public Health (Tuberculosis) Regulations, 1912, for failing to notify a case of tuberculosis within 48 hours. Mr. Condell had attended the case on Dec. 14th, 1914, but notification of it had not been received by the district medical officer of health, Mr. D. S. Park, until Jan. 4th. Upon this Mr. Park had written to the defendant asking for an explanation but had received no reply, nor had the clerk to the district council who wrote subsequently. The defendant, who acted as assistant to two medical practitioners practising in partnership, stated as an explanation of the delay that he had made out the notification and addressed it, but that it had been mislaid and not found and posted until the beginning of January. In this he was corroborated by a dispenser. The defendant also stated that he had been unable to read the letter of the medical officer of health, and that he did not see why the clerk to the council should have written to him as he believed that the notification had been duly sent. The magistrates had been informed by Mr. Park that due consideration would have been given by the council to any explanation before taking proceedings, and no doubt had this omission to reply in their minds in imposing a fine of £3 and costs, including £2 2*s.* for the fee of the prosecuting solicitor, with the alternative of a month's imprisonment in default of distress.

THE LANCET.

LONDON: SATURDAY, FEBRUARY 27, 1915.

Radium Therapeutics.

THE annual report of the Radium Institute dealing with the work done during the year 1914 is before us, having been issued with commendable promptness. It differs from that of the previous year in being more comprehensive, and details of technique and of actual cases are given to an extent not attempted before. From the abstract which we publish in this issue it will be seen that the report does not vary much from the reports issued in former years in its main features, but we have now the records of many cases in which radium emanation has been largely employed, and also records of a few instances of rare conditions which have proved amenable to radium therapy. The total number of cases is somewhat smaller—841 as against 972 in 1913. Ninety-five were examined but not treated, and of the remaining 746 cases 429 were malignant, including 73 of rodent ulcer. As in the previous report none are stated to be cured, but we have the same number as in the last report, viz. 50, given among apparent cures. Owing to the smaller total number in the present report we obtain a slightly better percentage among the apparently cured. On the other hand, in the percentage of those described as "improved" there is a decline to a corresponding degree. From this we may say that as regards this treatment of malignant disease we are broadly in the same position as we were a year ago. While it would have been more satisfactory to be recording some definite advancement, there is no reason for disappointment. Real advancement in radium therapeutics must be slow; it is quite conceivable that taken in bulk the cases in 1914 were slightly less favourable than in 1913, though in both years the patients were as a whole in an advanced state of disease. And speaking generally, it must be remembered that in radium therapeutics we are concerned with some of the most difficult pathological problems that have ever confronted the medical profession. The work of the Radium Institute has proved valuable as well as suggestive, and its utility will surely develop with time and experience.

Carcinomata affecting moist mucous membranes still continue to be very refractory in their response to radium, but we note that a new method of attack is being tried which promises well. It consists in burying within the nodule a very small but intensely powerful emanation tube. The reaction is severe, and in some of the cases the nodule ceases to grow and becomes replaced by fibrous tissue. Unfortunately, neither here nor in other situations does the application have any influence on metastasis, and it is this unfortunate property of malignant growths that marks the most serious limitation to radium therapy, since a large proportion of these inoperable cases must be near to the stage of dissemination—some indeed have actually entered upon it. Excellent results continue to attend the radium treatment of carcinoma of the uterus, much more so than when the rectum is attacked; and especially is this the case when the site of the growth approaches the sphincters. In a few instances carcinoma of the prostate has been treated with results that are very hopeful. With regard to the sarcomata, it is pleasing to note that the outlook is distinctly more encouraging; as a rule, if they are submitted to early treatment these growths do very well under radium treatment. Those situated in the tonsil and post-nasal space seem to be particularly benefited, but in all cases the treatment must be vigorous. Non-malignant growths react so favourably that an almost unbroken series of successes is presented in the report, and the same may be said of many skin diseases which resist most ordinary methods of treatment; this is particularly noticeable where much itching is present, such as in lichenification of the skin and in pruritus. It is of interest to record that considerable success has attended the treatment of angio-neurotic œdema—a comparatively rare disease that has resisted other methods of therapy. A striking feature of the work of the past year has been a large increase in the number of cases of arthritis deformans treated by the daily administration of a definite quantity of radium emanation solution, with results that are quite remarkable. Early cases in subjects under 40 years of age respond most favourably, especially where the changes are peri-articular. Increased mobility, diminished pain and grating, restored muscular tone, and improved general health have been noted in a large proportion of cases. Considering what an obstinate, painful, and crippling disease this is, these results constitute no mean achievement; they may bring relief to thousands of sufferers. It will give some idea of the extent of the work at the Radium Institute when it is stated that the number of treatments given last year was no less than 6453, and it is gratifying to record that more than half (3972) were given free of charge to necessitous patients.

The report of the work done in the radium department of the Edinburgh Royal Infirmary during the same period has also just been issued, and we publish a summary of it this week. While naturally the total number of cases treated is very much smaller, the results, generally speaking, are the same as in the case of the Radium Institute, at least so far as treatment by means of tubes and plates containing radium is concerned. The use of emanation tubes and solution apparently has not yet been attempted in Edinburgh, if we may so judge from the absence of any reference to this in the report. Altogether we are of the opinion that the result of the year's work in radium therapy discharged by these two institutions is very satisfactory, and that great credit

is due to Mr. HAYWARD PINCH and Dr. DAWSON TURNER for the sound and scientific manner in which this important work has been carried out in their respective jurisdictions. From time to time the scarcity and price of radium have given rise to considerable comment, and probably these factors are responsible for many individual sufferers being denied the benefits they might have secured. We are not sure that this is altogether to be regretted in the case of a powerful agent such as radium. The requisite quantities for serious work and investigation could be obtained only by means of co-ordinated wealth, and this has ensured the work being entrusted to experts possessing the necessary qualifications, whose coördinated efforts are likely to advance our knowledge far more rapidly than would the unregulated efforts of the profession at large; also the possibility of harmful effects arising from its use in unsuitable cases is reduced to the minimum. Should the time come when a plentiful and cheap supply of radium is available we shall have every reason to be thankful for the admirable investigations made under present conditions.

In conclusion, while we are glad to pay tribute to the excellent work and progress made in radium therapy, we should not forget that in the X rays we have an agent that has done us good service in the past but whose possibilities are by no means exhausted. The exhibition of cases of uterine cancer, treated by radium, which took place at the Royal Academy of Medicine in Ireland at the last meeting of the Section of Medicine, led to a debate of some significance in this direction. The question of immunity to malignant disease following upon the use of radium emanation, here touched upon, is one that fully deserves further attention Again, some remarkable results have been obtained through the use of massive doses, heavily screened, and applied to deeply seated malignant growths. It is not unlikely that the therapeutic applications of the X rays and radium will each become relegated to certain classes of work and much of the present overlapping avoided. Individual idiosyncrasies will have to be met, but in the main the two agencies should be considered as complementary rather than antagonistic. From all of which it will be seen that much earnest work remains to be done.

The War and Industrial Pharmacology.

IN more directions than one the war is opening up joints in the harness of the nations. One of the difficulties that has made itself felt in nearly all countries except Germany is a shortage in the increasingly important class of synthetic products used in medicine. This is one of the directions in which it has been urged that we should endeavour to capture the enemy's trade, for we have unwisely allowed Germany to establish a practical monopoly of these drugs. This matter is also forcing itself upon the attention of our French colleagues, as is evidenced by an extremely interesting address by Dr. EDOUARD BARDET, of Paris, the new President of the Société de Thérapeutique,[1] on Jan. 13th.

Dr. BARDET suggests that the reason why this industry has been captured by Germany is that favourable legislation has been enacted and invaluable assistance rendered by the universities in the solution of industrial problems. With this backing German capitalists have not hesitated to embark the all-essential capital in the development of this industry. Dr. BARDET goes on to point out that in Germany men of science of the highest calibre have not considered it beneath their dignity to devote their energies to the work. In France, on the other hand, the opposite has been the case, and French men of science have shown a systematic indifference to industrial pursuits. Dr. BARDET also insists that the French pharmacy law, which was framed practically before any chemical industry existed, and forbids the manufacture of pharmaceutical products except by pharmacists or under their control, has been a powerfully deterrent factor. In the circumstances, he says, capitalists not unnaturally decline to sink large sums in an industry in which they are personally debarred from controlling the expenditure of their money. In his opinion it is largely due to these causes that the manufacturing side of synthetic chemistry has been neglected in France, and he gives one instance which serves to show that while industrial enterprise has been kept in check initiative has not been wanting. The case he cites is that of the drug which is so well known under the German trade name of urotropin. In 1894 Dr. BARDET, in conjunction with TRILLAT, first called the attention of the profession to its therapeutic uses and suggested for it the trade name of formine. This name was public property, and any chemist or pharmacist was free to manufacture the drug and put it on the market in that name. It was not, however, until the German house of Schering, as a result of Dr. BARDET'S labours, produced and popularised the drug under the name of urotropine that the French medical profession paid attention to it, with the result that France for 20 years has paid to Germany an annual tribute of hundreds of thousands of francs for an ordinary drug of French origin which could have been sold at much lower prices when freely manufactured under its chemical name or that of formine.

That someone or something is to blame for this state of affairs is obvious, but whether Dr. BARDET places the blame in the right quarters is at least open to question. In England a good many people have selected the cost of alcohol as the scapegoat, but Dr. BARDET'S scapegoat is apparently the archaic pharmacy laws. Again and again he points to the restrictions imposed by the pharmacy laws as being responsible for the neglect of the manufacture of

[1] Bulletins et Mémoires de la Société de Thérapeutique.

synthetic drugs. But is he right? It is true that the French law which regulates the practice of pharmacy is in urgent need of amendment, but as no doubt Dr. BARDET knows, the administration of the law in France is tempered with a good deal of common sense, and a good many things are done openly, and apparently with the full sanction of the Government, which if tested would be found to be technically illegal; in fact, he instances one such case himself—namely, the manufacture of bromides, which is carried on in France by makers who are not pharmacists, because bromides are used in photographic processes. Those who have had personal experience of the working of the French pharmacy law, and of the indulgent attitude of those who administer it, can hardly have failed to form the opinion that if any of its provisions really stood in the way of real progress their application would be rendered obsolete. What seems to have been overlooked is that the manufacture of coal tar colours, of which industry the manufacture of synthetic drugs is merely an offshoot, has been neglected in France almost as much as in Great Britain. Yet there is nothing in the French pharmacy law to prevent people who are not pharmacists from manufacturing dyestuffs. While one cannot but think that Dr. BARDET has found the wrong scapegoat, it can readily be acknowledged that he has done a useful service in drawing attention to the defects of the pharmacy law, for it would be a very serious matter if the progress of this industry should be impeded even slightly by restrictive legislation of an unnecessary kind. Dr. BARDET also blames the comparative indifference on the part of the medical profession in France as being partly responsible for the neglect of the synthetic drug industry; but here, again, it is doubtful whether his view is altogether a just one. It must be remembered that synthetic drugs were not made to supply a demand, but that the demand was created to meet the supply. The real causes of the neglect of the fine chemical industry in France have been much the same as in this country—namely, the failure of our manufacturers to make use of the services of technical chemists and the failure of the Government to subsidise chemical research, and to encourage manufacturers to apply the discoveries of the laboratory to industrial problems. Happily there are distinct signs that in this country at any rate our manufacturers now recognise their mistakes, and what is equally important, we have the assurance that the Government is willing to grant a very substantial sum for the purpose of experimental work in connexion with the production of coal-tar colours. And as the chemistry of these colours is so intimately related to that of synthetic drugs it seems clear that the production of these drugs will progress with the progress of the dyestuffs industry. No doubt the French Government is equally well aware of the needs of the industry and will take the steps which seem to be indicated.

Annotations.

"Ne quid nimis."

REGULATIONS PROHIBITING THE SALE OF DANGEROUS SHELL-FISH.

THE Local Government Board has just issued an Order, under the Public Health (Regulations as to Food) Act, 1907, to take effect on March 1st, to enable the local authority of any port or sanitary district which comprises tidal waters to prohibit the sale of shell-fish taken from any public or private laying, when evidence is forthcoming that the consumption of the shell-fish is likely to cause danger to public health. The prohibition is to be made on the advice of the local medical officer of health, and in all cases the owner or fishmonger is to be given the opportunity of relaying the shell-fish, for purposes of purification, for such periods as the medical officer of health advises to be necessary. This period, in the case of contamination with sewage organisms, will usually be at least a fortnight. The action may be taken on local evidence alone or as the result of representations to the local authority by some other authority in whose district shell-fish from the suspected laying are sold. Medical officers of health may in some cases find it difficult to determine what degree of risk of possible sewage contamination will justify their application of the new powers, but fortunately the main facts are well known and the principles of action are now generally agreed upon. The opportunities of pollution of oyster layings and of beds of cockles, mussels, and other shell-fish all round the English coast were very fully described in the late Dr. H. T. Bulstrode's well-known reports of 1894 and 1911 to the Local Government Board, while the whole question of polluted shell-fish was thoroughly investigated by the Royal Commission on Sewage Disposal, and discussed in its fourth report. In the great majority of cases in which outbreaks of disease have been attributed to shell-fish, the foreshores, layings, or ponds have been so situated that opportunities of pollution by sewage have been obvious and indisputable on physical examination alone, bacteriological tests of the water or the shell-fish being almost unnecessary for proof of the occurrence of such opportunities. The efforts which have been made by oyster merchants, with the powerful aid of the Fishmongers' Company, to secure the general wholesomeness of oysters in this country have largely depended for their success on the elimination of oysters from all layings where such obvious pollution has been liable to arise, and it may be hoped that the new regulations will cause a corresponding degree of precaution to be taken in respect of sewage-polluted cockles and mussels, which in recent years have been much more frequently accused of producing enteric fever than have oysters. In a circular to the local authorities concerned the Local Government Board indicates that it has not yet been possible to alter the law in regard to the supervision of the purity of rivers and estuaries in the way recommended by the Royal Commission, and that the new regulations, which have to be enforced by existing local authorities, are to be considered as an alternative adopted to meet present needs as far as possible under existing powers. At a time when every precaution should be taken to minimise all sources of enteric

fever infection this action of the department will be welcomed. The regulations provide for appeal to the Local Government Board, and thus should secure that in any case of difficulty the question of prohibiting the sale of shell-fish from suspected layings will receive careful expert examination.

WAR AND EUGENICS.

THE relation of war to eugenics is quite naturally forcing itself at present very strongly upon the attention of the eugenists. In the United States thoughts were turned in that direction the moment the magnitude of the struggle was envisaged. Professor Starr Jordan, of Stanford University, California, has delivered a notable address upon Eugenics and War, and the same subject occupied the attention of Mr. Theodore Chambers in a lecture delivered last October before the Eugenics Education Society.[1] Now the second Galton lecture, delivered before the same society in memory of the late Sir Francis Galton on his birthday, Feb. 16th, by Mr. J. Arthur Thomson, Regius professor of natural history in the University of Aberdeen, has taken up the same subject, and almost necessarily follows much the same lines as those of Mr. Chambers. Professor Thomson emphasised the fact that those who see in warfare a eugenic influence along the line of the struggle for existence lose sight of the difference between the effect of tribal warfare and modern wars, in that while the former eliminated the weak and cowardly the latter takes special toll of the virile and courageous. The struggle for existence is often misunderstood, moreover, through its limitation to the one aspect of sharpening tooth and claw, whereas other modes of response to the limitations and difficulties opposed by environment, such as the fostering of parental care, the subordination of self-preservation to the interests of the race, and (especially among the finer forms of life) a movement towards coördination rather than competition as favouring survival and success, are overlooked. In this respect war appears biologically rather as a reversion to the most primitive and crude form of the struggle, and involves a serious danger of descent in the scale of evolution. Professor Thomson, with a view to counteracting this, suggests that the tendency to economise in the "nobler luxuries" should be resisted, as crippling the least readily replaceable members of the community. It is interesting to recall here that the distress among professional classes caused by the war, which will inevitably be heavier and will endure longer after peace is declared than with most other sections of the community, has led to the formation of a Professional Classes War Relief Council (13 and 14, Prince's-gate, S.W.), which aims to organise assistance by the coöperation of professional institutions and societies organising relief, not in the way of charity but by giving centralised forms of aid in such matters as education, training, emigration, maternity, and temporary employment, and generally by rendering assistance to the dependents of professional men who have enlisted or have been called on to serve in their Territorial units. In the matter of education especially, measures will be taken to enable such dependent children to go to or continue at school when their education would otherwise be interrupted. A great point in favour of this scheme is the fact that its organisation need not be transitory and limited to the duration of the war, for many of the methods indicated in the council's programme will possess permanent utility. The personnel of the council will command general confidence, which will be heightened for the medical profession by the presence thereon of well-known medical men. Professor Thomson in his address further recommends the encouragement of marriage among soldiers, where adequate provision for widows and dependents is forthcoming, and urges a jealous scrutiny of the various well-meant but hasty proposals for relieving war strain, such, for instance, as the suggested employment of children in agricultural labour. It must be remembered, however, that all available men may be needed for service, while the stoppage of agricultural pursuits would be as disastrous as a defeat. The outdoor healthy life of agricultural work for children can scarcely be condemned as that in shops and factories might justly be. Compulsory military training Professor Thomson regards as a lesser evil than a large standing army, but fears its possible effect in Prussianising the people. Above all he urges strenuous resistance against any lessening of eugenic endeavour in consequence of the war.

[1] Eugenics and War, by Theodore Chambers, Eugenics Review, January, 1915.

MEDICAL PRETENSIONS IN AMATEURS.

WE have before us two curious leaflets. One is headed "The Eustace Miles System, Revised List of Fees (payable in advance or at the time of interview), for the Various Health, Diet, Exercise, and Mind-training Courses, Threefold, Twofold, and Blood Examinations, Interviews, &c., &c."; the other is entitled "In Time of War," and in it "The Health and Medical Reform League" advertises an At Home to be held at the Eustace Miles Restaurant, when short addresses, music, and tea are promised to the company. Both of these documents appear to us to have the same objectionable feature in that they endeavour to attract by the pretension of qualification to advise upon matters which in general experience are best treated by those having medical knowledge. We have no criticism to offer of the fitness of Mr. Eustace Miles to deal with all things strictly relating to the ball games of which he is a proficient and well-known exponent, and his personal knowledge of how to train for these games has its value; but we very strongly deprecate the introduction of a marked medical flavour into a commercial advertisement issued by any person not having professional training. Of course, if Mr. Miles did possess medical qualifications he would be debarred from issuing any advertisement at all, whether in the form of a list of fees or otherwise. We quote from Mr. Miles's tariff sufficient to indicate the kind of matter which we consider objectionable, not only as a subject of advertisement, but as an invitation to persons who may be in need of medical treatment, or who fancy themselves so, to seek the advice of the unqualified. There are more than 20 items in the menu which he offers, and if many are harmless the following cannot be without risk.

A. For the First Threefold Examination and Report, with full Health Course (Diet, Exercises, Mental Helps, Water-treatments, &c.), and a Personal Interview with Mr. Eustace Miles lasting for about 30 minutes: Five Guineas.

C2. For each Blood Examination and Report, with General Advice (see G.) and a Personal Interview lasting for about 30 minutes: Three Guineas.

D. For each examination of only the Urine and Excreta (for which Mr. Collings sends special postal tins, &c., with full instructions) and report and general advice (see G). Two guineas.

We gather under "G" that general advice is given by correspondence, and includes considerable but not full advice, and under "H" that for a guinea there can be had a personal interview lasting 30 minutes, to include "as much practical advice as can be given in the time." At a special fee blood examinations may be made at "patients' own houses." Under the head of cookery there are offered lessons and "remedial recipes," presumably not administered personally by Mr. Miles, for "the cure of gouty and rheumatic disorders, liver and kidney troubles, anæmia, &c." "Single lesson (4 or 5 recipes for one complaint) 5s." The food provided by Mr. Miles at his restaurant may be wholesome, and some palates may find it agreeable, but such catering does not constitute a scientific training. Many people eat more than is good for them and consume food which they had much better avoid, but we must express without qualification the opinion that anyone whose state of health renders examination of his blood, urine, or fæces desirable had better place himself in the hands of a medical practitioner, and receive such advice as to diet as his case demands. If any of the articles of food thus recommended are to be obtained from the establishment which bears Mr. Miles's name, then, no doubt, it will be found an excellent place at which to purchase them. The second document does not in any way mention Mr. Miles, but is the advertisement of a meeting for the delivery of "Short Addresses on 'International Importance for Helping Soldiers and Others under Nerve Strain, by Modern Methods of Nursing and Diet.'" The speakers named are a Mr. Maitra, a Miss Beadon, and a Mr. T. Butt. The qualification of the last named alone is given. He is described as "late Private, Grenadier Guards," and may have had personal opportunities for the observation of nerve strain in soldiers. But the point is that no one without real knowledge of physiology and psychology can have anything to say upon the subject that is worth hearing, and this is not the right time to invite general audiences to listen to any teaching upon so critical a subject as nerve strain in soldiers, save from men and women of the highest equipment. Mr. Eustace Miles could, we think, put his restaurant to better uses.

ANTHROPOLOGY OF THE AFRICAN BANTUS.

Mr. G. D. Maynard and Dr. G. A. Turner[1] have utilised the opportunities afforded them by their connexion with the Witwatersrand Native Labour Association to collate a comparatively large number of anthropological records on Portuguese East African natives recruited for work on the gold, diamond, and coal mines of the Transvaal. The authors give a historical sketch of the various native races, divided into two main classes: (1) the subtropical or East Coast natives, from between the Zulu border and latitude 22° S., and (2) tropical natives, from between the Zambesi river and German East Africa. The first group contains the Shangaans, Mytopis, Inhambaans, and Maputos or Tongas; the second, the Agoni and Agawa from the Pete district, the Quilimanes, Mozambiques, and Portuguese Nyassas. Accuracy of detail being out of the question, the authors have attempted merely to give the reader some idea of the nature of the material, and to demonstrate the futility of attempting to regard any tribe as a pure strain, even if only for a few generations; for tribal wars are frequent and the predominant tribe leaves its mark on the inferior race, since all marriageable females become the property of the dominant race. Other influencing factors in intermingling are the exchange of women among chiefs, the slave trade, and the Portuguese policy of bringing black soldiers from one colony to another and of deporting chiefs and their followers from one part to another. Examinations of the actual data obtained from post-mortem examinations of natives show very marked differences between the natives from tropical districts and those coming from south of lat. 22° S., and even on subdividing these groups differences are still discernible, though to a less extent. Descriptions and tables of the data obtained follow under the heads of stature, brain weight, skull thickness (in which connexion it is noticeable that no evidence is forthcoming to lend weight to the contention that the native skull is thicker than that of the European), cephalic and cranial indices, scalp measurements, heart, spleen, liver, and kidney weights, and intestinal measurements. Some excellent drawings by Miss O. M. Vieick depict the faces of various natives typical of their races, and illustrate the facial markings that form a noticeable feature among many Bantu tribes. Outside scientific work of this character by medical men is worthy of all commendation.

[1] Anthropological Notes on Bantu Natives from Portuguese East Africa. By G. D. Maynard, F.R.C.S.Edin., and G. A. Turner, M.B., B.Ch. Aberd., D.P.H. Johannesburg: The South African Institute for Medical Research. 1914. Pp. 36 + 14 plates. Price 2s. 6d.

THE MEDICAL EDUCATION OF WOMEN.

ON Thursday in last week a meeting was held in Sunderland House, Curzon-street, London, the hostess, the Duchess of Marlborough, presiding, when the object was to promote the extension of the London (Royal Free Hospital) School of Medicine for Women. The Duchess of Marlborough in opening the proceedings dwelt upon the shortage of medical practitioners already felt in this country, a shortage which must inevitably increase as military exigencies make even greater demands upon a limited supply, and pointed out that the claims of medical women to a wider and more generous public support were accentuated by the emergency. The view is one that we all support. Sir Donald MacAlister made a statement recently at a meeting of the Executive Committee of the General Medical Council to the effect that for the next few years from 200 to 300 fewer medical men will qualify as medical practitioners, and his statement was communicated to the War Office in order that senior medical students serving in the Army in different capacities might be released and enabled to continue their studies. In this way the more immediate shortage may be alleviated, but the position in the years to follow must remain unaltered. The medical curriculum occupies the student on an average at least six years, so that no reinforcement in our medical schools will be reflected upon the Medical Register until 1920 or so. The shortage would have been inevitable in any case, and in face of contradiction we have frequently said so; the war bids fair to make it acute by increasing the demand and diminishing the supply. This affords a great opportunity to medical women, and there is no

doubt of their intention and ability to use it. For with them the numbers of recruits are increasing instead of decreasing, while the openings for practice have been vastly enlarged, every bit as much in acknowledgment of the sterling services rendered by medical women as because the exigencies of the times have made new avenues free to them. Medical women are now serving the public in hospitals, in private practice, in pathological laboratories, as medical missionaries, in Government departments, and in municipal bureaus, and in all their various capacities are justifying their positions. And in the war they have made their mark. The Director-General of the Army Medical Service at the Sunderland House meeting said that his opinion of the work done by the medical women on the staffs of their hospitals at Paris and Boulogne had been so favourable that he had specially given certain of them larger responsibilities; the impressions of Sir Alfred Keogh have received confirmation on all hands, and his expressed intention of making greater use of medical women in connexion with the war has been generally approved. In asking the public, therefore, to support the extension of the London School of Medicine for Women the promoters of the movement are on the surest of ground—the services of the medical women are required, and they have proved that these services are of great value to the community. The medical education of women largely centres round the London School of Medicine for Women, where more than half the women practitioners on the Register received their education, and no more worthy object of public support, both on general and scientific grounds, has ever been brought forward than this school. £25,000 is asked for, but much more might well be given.

THE Friday evening discourse on March 11th at the Royal Institution will be given by Sir Rickman J. Godlee on "Back to Lister."

Sir Richard Douglas Powell, Bart., will deliver an emeritus lecture, entitled "A Case of Congenital Heart Disease," on Friday, March 5th, at 3 P.M., in the new theatre of the Middlesex Hospital Medical School.

WE regret to announce the death of Dr. Edward Cox Seaton, which occurred on Saturday, Feb. 20th. Dr. Seaton, who was consulting medical officer of health to the Surrey county council, had been throughout a long professional life a prominent and active sanitarian.

A CLEARING HOSPITAL FOR WAR REFUGEES.—At the request of the Local Government Board a dispensary and small hospital for war refugees has been opened in Sheffield-street, Kingsway, W.C., under the control of the Metropolitan Asylums Board. A large building, admirably suited for the purpose, has been fitted up with all the necessary requirements for a dispensary, and hospital accommodation has been provided for 21 beds, with possibilities of extension to 24, while in addition six cubicles can be used as observation or isolation wards. On the ground floor are a large waiting-room, a dressing-room and dispensary, and offices for the medical and nursing staff. Should occasion arise the accommodation can be considerably extended. The institution is intended to act as a clearing house, where cases may be kept under observation and treated prior to being drafted to other institutions. The medical officer who has charge of the hospital and dispensary, Dr. D. F. Riddell, is being assisted by Dr. G. DeLaey, a Belgian medical man. Special cases receive the attention of the specialists attached to the Metropolitan Asylums Board.

CEREBRO-SPINAL FEVER: A MEMORANDUM FROM THE LOCAL GOVERNMENT BOARD.

OCCURRENCE OF THE DISEASE.

A MEMORANDUM of the first importance upon the incidence of cerebro-spinal fever, its clinical features, and the administrative action that should be taken against its spread, was issued on Wednesday morning by the Local Government Board to the medical officers of health and sanitary officers of this country. The Memorandum has been prepared by Dr. Arthur Newsholme, medical officer of the Board, in view of the recent occurrence of the disease in various districts, and is a revision of the Memorandum first issued by the Board in 1905 and reissued in 1910. After a brief résumé of the outbreaks of the disease at earlier dates, the Memorandum continues:—

Incidence of the disease.—In this country seasonal incidence of the disease has not been marked, but there has been some increased prevalence of the disease in winter and still more in the spring. This has been much more marked in Continental and American experience. Amongst the civil population in this country and in such epidemics in other countries the majority of the cases have occurred in children. During 1912 there were notified in England and Wales 272 cases,[1] during 1913, 304 cases, and during 1914, 310 cases of this disease. It is possible that some of these cases were meningitis due to other micro-organisms than the meningococcus, and that some cases regarded as cerebro-spinal fever were poliomyelitis. On the other hand, it is not unlikely, in view of the difficulty of diagnosing sporadic cases, that unrecognised cases of cerebro-spinal fever may have occurred.

Clinical features of the disease.—The late Mr. Netten Radcliffe described cerebro-spinal fever as "an acute, epidemic disease, characterised by profound disturbance of the central nervous system, indicated at the onset chiefly by shivering, intense headache or vertigo, or both, and persistent vomiting; subsequently by delirium, often violent, alternating with somnolence or a state of apathy or stupor, an acutely painful condition with spasm—sometimes tetanoid—of certain groups of muscles, especially the posterior muscles of the neck, occasioning retraction of the head and an increased sensitiveness of the surface of the body. Throughout the disease there is marked depression of the vital powers, not unfrequently collapse, and in its course an eruption of vesicles, petechial or purpuric spots, or mottling of the skin is apt to occur.[3] If the disease tend to recovery, the symptoms gradually subside without any critical phenomena, and convalescence is protracted; if to a fatal termination, death is almost invariably preceded by coma. After death the enveloping membranes of the brain and spinal cord are found in a morbid state, of which the most notable signs are engorgement of the blood-vessels, usually excessive, and an effusion of sero-purulent matter into the meshes of the pia mater and beneath the arachnoid."[3] Local prevalence of illness distinguished by the foregoing features would, no doubt, attract attention and would, it may be presumed, lead to early recognition of its true nature. But while these features are characteristic of typically severe cerebro-spinal fever, experience shows us that it may and does appear in milder or in anomalous forms which render identification difficult, and which lead to its being mistaken for other ailments of more common occurrence in this country. Illustration of this is afforded by certain localised outbreaks of cerebro-spinal fever in the eastern counties in 1890, where this disease was generally mistaken for sunstroke or for enteric fever, or was looked

[1] The disease was made notifiable for the entire country from Sept. 1st 1912. Prior to this it had been notified in a number of sanitary areas.
[2] In a very considerable number of instances, however, no eruption of any kind is present.
[3] To the clinical manifestations of the disease indicated in the above description may be added the presence of Kernig's sign and of tache cérébrale.

upon as a new form of illness; by the prevalence of what would seem to have been cerebro-spinal fever in Northamptonshire in 1890–91, where the malady was for the most part diagnosed as pneumonia or as sore throat; and by the occurrence of cerebro-spinal fever in Irthlingborough in 1905, where many of the persons attacked were regarded as suffering from influenza. In these anomalous forms of cerebro-spinal fever, many or even most of the symptoms associated with the recognised type of the disease may be absent, while in mild cases they may be so slight or of such brief duration as to escape notice. It is necessary to be on the outlook for such cases when cerebro-spinal fever occurs in a locality or when illness not clearly referable to definable cause prevails in a particular neighbourhood. Cerebro-spinal fever is apt also to escape recognition when it is of the "fulminant" variety, in which death ensues rapidly. In these instances the disease has been mistaken for typhus fever, idiopathic tetanus, malignant measles, or other diseases.

Mode of spread of the disease.—Cerebro-spinal fever has a much more restricted direct infectivity than characterises a disease like small-pox, which attacks the majority of persons exposed to infection who are unprotected by vaccination or previous small-pox. In most outbreaks of cerebro-spinal fever only one member of the invaded family develops definite symptoms of meningeal disease, though exceptions to this statement are not uncommon. The meningococcus is found in the mucous secretion of the nasopharynx in a considerable proportion of those suffering from the disease, especially in its earlier stages, and also in some apparently healthy persons who have been in contact with cases of the disease.

The Memorandum continues by pointing to the probability of carriers of infection existing who are themselves unaffected, and while admitting that modes of infection as yet unrecognised possibly exist, concludes that cerebro-spinal fever generally spreads in association with overcrowding, lack of cleanliness and ventilation, inclement weather, and perhaps excessive fatigue.

ADMINISTRATIVE ACTION.

The second part of the Memorandum deals with administrative action, and commences by pointing to the necessity of careful diagnosis between cerebro-spinal fever and poliomyelitis, both of which diseases are compulsorily notifiable. The advisability also is mentioned of making inquiry into the circumstances of deaths recorded as tuberculous meningitis, meningitis, or convulsions (with no further definition) when these deaths occur in districts where cerebro-spinal fever is known to be present, while medical officers of health are recommended also to invite from practitioners details as to anomalous cases of sickness which might be cerebro-spinal fever.

The Memorandum then points out the necessity of employing bacteriological aids to diagnosis.

In view of the difficulty of diagnosis of early cases of the disease the Board are prepared to undertake the examination in their pathological laboratory of cerebro-spinal fluid sent to them packed in accordance with the regulations of the Post Office. The parcel should be addressed to the Medical Officer, Local Government Board, Whitehall, and should be accompanied by a short statement of the circumstances of the case. The hour at which the specimen was collected should be stated, and delay in transmitting the material should be avoided. The patient is also to be strictly isolated, carefully nursed, and all precautions are to be observed as to disinfection, both during the patient's illness, and later when the sick-room is vacated.

The Memorandum continues:—

Investigation of sources of infection.—The possible occurrence of anomalous cases should be investigated. Special attention should be directed to cases of sore-throat, headaches, pains in back and limbs, &c., suggesting "influenza." The important share borne by healthy "carriers" as agents of infection should be borne in mind. The bacteriological examination of swabs from persons likely from their history to have acted as "carriers" should be undertaken. The method of procedure is set out in the next paragraph.

Investigation of possibilities of continued infection.—The infectivity or otherwise of contacts can be determined by taking swabs from the upper part of the nasopharynx. Swabs from the fauces are of small value. It is important to avoid contamination of the swab by the bacteria of the mouth and fauces. This has been effected by using a swab mounted on a long rod, curved at its distal end, and protected by a metal cannula. The swab should not be extruded until the end of the cannula has passed behind the uvula, and should be withdrawn into the cannula immediately after careful contact has been made with the mucous membrane of the nasopharynx. As the meningococcus does not live long in the swab it is desirable that Petri dishes containing suitable media should be obtained direct from a laboratory and inoculated directly the swab has been taken. The first Petri dish may become overgrown with extraneous organisms, and it is therefore desirable to use two dishes, the second being inoculated from the first by means of a sterile glass rod or other sterile implement. The Petri dishes should be forwarded to the laboratory without delay. Whenever practicable swabbing should be done by or under the superintendence of the bacteriologist. Inability to secure a positive result from swabbing may be caused by unskilled swabbing or by failure in the subsequent procedure of inoculation of the medium in the Petri dish or by failure to incubate promptly at the appropriate temperature. Negative results obtained with swabs sent by post for transfer to culture media at a laboratory may be due to the death during transit of any meningococci present.

Precautionary measures as to contacts.—All persons who have been in attendance on, or otherwise in close personal association with, the patient should be regarded as possible carriers of infection. The duration of the infectivity of contacts is doubtful. It will be a useful rule to regard them as possibly infective for three weeks from the date of last association with a patient, but the partial restrictions to their intercourse, otherwise desirable, may be relaxed if swabs from the nasopharynx examined under the conditions set out in the foregoing paragraph fail, preferably on two occasions, to show the presence of the meningococcus. Contacts should be instructed and warned that they may be a source of danger, although remaining quite well themselves, and that for this reason they must abstain from intimate personal association with others. This rule should be especially followed by contacts who have catarrh. Contacts should also be advised that an open-air life diminishes the risk of infection both of themselves and of others. Isolation of such contacts in a hospital should not be attempted. Detection of the meningococcus in the nasopharynx of a contact is valuable evidence of his potential infectivity to others, while failure to find the micro-organism does not possess an equal negative value. Nasal sprays have been recommended for contacts, a disinfecting solution such as potassium permanganate, 1 in 1000, being used. If spraying is employed it should be carried out under medical supervision.

General preventive measures.—In the presence of cerebro-spinal fever the nearest approach to open-air life should be aimed at, especially for all contacts. In view of the known association of cerebro-spinal fever with overcrowding, insufficient ventilation, and uncleanliness, the avoidance of these conditions becomes a matter of prime importance. This is especially true where large numbers of persons are aggregated under one roof.

A covering letter to Dr. Newsholme's Memorandum, signed by the Assistant Secretary of the Local Government Board, requests that medical officers of health will forward to the Board, addressed to the medical officer, a report on each case of cerebro-spinal fever notified in their districts, and a schedule is appended to the Memorandum indicating the form which the information should take.

REPORT OF THE RADIUM INSTITUTE FOR 1914.

Mr. Hayward Pinch's report for 1914[1] deals with the cases which have presented themselves at the Radium Institute from Jan. 1st to Dec. 31st inclusive, and the cases treated were in no instance selected. The only cases refused have been those in which the patients were practically moribund, or where the disease was of a kind for which radium therapy was manifestly unsuitable. The report is of a very comprehensive character, containing details of technique and actual cases under each heading. As a copy will be sent on application to every practitioner who desires it, we abstract only such portions as will give a general idea of the results attained during the year's work.

Carcinomata (Squamous-celled (Epitheliomata)).

Epitheliomata of the face, trunk, or extremities, if flat and superficial and accompanied by little or no ulceration, give satisfactory results when treated with quarter or half strength apparatus, screened with 0·1 mm. of lead, the exposures varying from six to twelve hours' duration, spread over a period of three or four days. The retrogression of the growth is quickly brought about and little or no scarring results.

Ulcerating epitheliomata without much subjacent infiltration require treatment with quarter or half strength apparatus applied unscreened for a total exposure of two to six or eight hours, spread over a period of four or five days, and repeated after an interval of six weeks if necessary. A destructive reaction follows, but the result is usually quite good, and there is but little cicatricial contraction.

Ulcerated epitheliomata with great infiltration require prolonged treatment with heavily screened apparatus emitting only hard β and γ—the so-called "ultra-penetrating"—rays. Exposures of 30 to 60 hours given during one week, and repeated in five or six weeks' time are best; but if the growth shows signs of rapid extension the borders should be given a vigorous treatment with unscreened apparatus.

Epitheliomata of the buccal, lingual, and pharyngeal mucous membranes usually prove both refractory and disappointing in their response to radium, but a new method of treatment has been devised which in instances of cancer of the tongue has given somewhat encouraging results; it consists in the burying within the carcinomatous nodule of a very small but intensely powerful radium emanation tube possessing an initial activity equivalent to that of 80 to 100 mg. of radium bromide, enveloped in a screen of 1 mm. of silver or 0·3 mm. of platinum, and giving an exposure of 24 hours' duration. A fairly severe reaction follows, and in some cases the nodule ceases to grow and becomes replaced by dense fibrous tissue. Unfortunately, however, the treatment appears to have but little effect in arresting the dissemination of the disease, which sooner or later affects the neighbouring lymphatic glands or recurs close to the original lesion. The rate of growth of the infected glands can often be retarded by the prolonged and persistent use of the "ultra-penetrating" rays. If the dose given be a large one, the glands sometimes break down and discharge a milky-white fluid through a small sinus, and it is remarkable that ulceration of glands thus treated rarely occurs. In some of the more favourable cases of stricture of the œsophagus distinct, though temporary, benefit has resulted, and that this effect is not merely mechanical, due to the dilatation of the stricture by the apparatus, is evidenced by the fact that the improvement in the power of swallowing has persisted for six or even nine months after the termination of the treatment.

Detailed notes of four cases are given, the result in each being remarkably successful in view of the gravity of the condition.

[1] A Report of the Work carried out at the Radium Institute from Jan. 1st, 1914, to Dec. 31st, 1914, by A. E. Hayward Pinch, F.R.C.S., Medical Superintendent. (Published with the authority of the Committee.)

Carcinoma of the Uterus.

Uterine cancer continues to yield most gratifying results, and the effects of radium treatment in inoperable cases are far in advance of those obtained by any other known medical or surgical methods. The local manifestations of the disease are benefited in the most striking fashion, and the complete disappearance of fungating growth, arrest of hæmorrhage and discharge, healing of ulceration, and relief from pain are phenomena of frequent occurrence. In favourable cases, moreover, the treatment appears to exert a distinctly retarding influence on the dissemination of deposits, and thus to arrest the progress of the disease. It is not possible, however, to speak of "cure" even in these latter instances.

Carcinoma of the Bladder.

Six cases of this disease have been treated, and in two instances the results have been most gratifying. The hæmaturia, cystitis, and all subjective symptoms have disappeared, and cystoscopic examination has shown that the size of the growth has been greatly lessened, and any ulcerated surface has become covered with healthy epithelium.

Carcinoma of the Breast.

The number of patients with this disease applying for treatment far exceeds that of any other malignant condition. The policy of declining to treat operable cases is still rigidly adhered to, unless the patients have absolutely refused to submit to operation, and radium is used as a last resource. The progress of inoperable, slow-growing cases of the atrophic type is usually much retarded by the use of radium, especially when the metastases are confined to the skin, axillary, and supraclavicular lymphatics, and do not affect the lungs or abdominal viscera. Very small isolated cutaneous nodules on the chest wall, if few in number, may be effectively treated by unscreened exposures of one or one and a half hours' duration with a half-strength radium plate. If very numerous and closely set prolonged exposures of 30 to 40 hours' duration to heavily screened rays are preferable, and this method of treatment should also be resorted to for the primary growth, infected glands, or ulcerated surfaces if such exist. Superficial ulcerations unaccompanied by much subjacent induration are peculiarly susceptible to the action of radium and complete healing of these lesions is frequently observed. Little or no effect appears to be exerted in the prevention of metastatic deposits, though the treatment does not, at any rate, hasten their dissemination. Some cases in which pleurisy or ascites, dependent upon carcinomatous invasion of the pleura or peritoneum, has been present, have shown remarkable improvement, and the application of powerful apparatus screened with 2 mm. of lead over the affected pleura or peritoneum, after a preliminary paracentesis, has effectually prevented the further formation of effusion.

A few patients have been under treatment at intervals of three or four months since the opening of the institute in August, 1911, and it has been observed that a stage in their treatment is reached sooner or later at which the response to radium fails and the benefit derived becomes negligible. In rapidly growing carcinoma of the medullary type radium can do but very little except relieve pain, even though enormous doses be employed.

Carcinoma of the Rectum.

The adoption of radium therapy in inoperable cases of this disease is usually justified by the results obtained, though the amount of benefit is rarely so marked or so great as in carcinoma of the uterus. The disease displays much variation in its response to radium, and numerous factors have to be considered in prognosis. Speaking generally, the soft annular and vascular type of growth is much more favourably affected than the flat, hard, non-annular plaque with much subjacent induration. In the treatment of this latter class of growth the action of the gamma rays (which it is impossible to prevent) on the healthy rectal mucous membrane opposite the plaque produces a proctitis, which though generally transient sometimes proves both persistent and severe, and adds greatly to the patient's discomfort. In the treatment of the former type, if the radium tube be of proper dimensions and introduced accurately within the lumen of the growth, little or no healthy mucous membrane is affected by the gamma rays and no proctitis occurs. Growths situate in the upper half of the rectum appear to

be more amenable to treatment than those in the lower, though this may be due to the fact that tenesmus is always more constant and severe when the growth is near the sphincters.

Carcinoma of the Prostate.

The number of cases of this condition which have been treated up to the present is not very large, but benefit has been noted in all of them. Hæmaturia, when existent, has been either diminished or abolished, pain has been greatly lessened, and the size of the growth decreased.

Rodent Ulcer.

Of all forms of malignant disease this is the one which is most amenable to radium treatment. For the purpose of prognosis it appears justifiable to divide rodent ulcers into two definite clinical types: 1. The hypertrophic nodular type, with slight superficial ulceration of a scaly character. This class responds extremely well to radium and yields most satisfactory results. 2. The excavating type, with undermined and overhanging edges and a gelatinous base. This not infrequently proves very intractable, and repair is most difficult to effect. Increasing experience in the treatment of this condition has strongly confirmed the opinion expressed in a previous report, that the best results were obtained by exposures of one and a half to three hours' duration to full strength applicators unscreened. Although the reaction following upon this procedure is in some cases severe, and accompanied by a transient œdema of the surrounding tissues, the scars are invariably smooth, supple, and inconspicuous, and the tendency to recurrence is exceedingly slight. It is desirable that cases should not have been treated by other methods. Old-standing cases that have been treated by the X rays or CO_2 snow unsuccessfully are always more difficult to treat and the results less perfect.

Sarcomata.

Speaking in general terms, these growths, if taken in their early stages and before dissemination has occurred, do very well under radium treatment. The burying within the growth of tubes of radium salts or radium emanation should be resorted to whenever practicable, and the action of these tubes may be much helped by the external application of radium plates heavily screened. The screening of the tubes should not exceed 1 mm. of silver, as the employment of thick lead or platinum screens is often followed by necrotic changes in the cells in their immediate neighbourhood, and a sinus forms and remains open for a very long time. It is essential to give as vigorous a treatment as possible, as the great vascularity of these growths, and their rapid and wide dissemination by the blood stream, are factors which militate very strongly against the chances of success. The best results are obtained in sarcomata of the tonsil and post-nasal space, and the effect in many such cases is amazing, the growths completely disappearing within six weeks of the treatment. Lymphosarcomata also give excellent results.

Lymphadenoma.

The most striking feature in the treatment of this disease with radium is the extreme rapidity with which the size of the affected glands is diminished, the effect being often clearly perceptible to the patients themselves within a week of the first exposure. To obtain this result, the employment of numerous large and powerful applicators, heavily screened, is necessary, and this heavy dosage is almost always followed by severe systemic disturbance, with high temperature and general malaise. After the reaction has subsided considerable improvement is generally apparent, though in the majority of cases recrudescence occurs. The time at which this takes place, however, varies within very wide limits, and instances have been noted in which the disease has remained quiescent for more than a year. The best results are obtained when the condition is confined to the lymphatic glands—the spleen not being affected.

Splenic Leukæmia.

A case of splenic leukæmia has been under treatment, which began in December, 1913, using flat applicators containing in all 150 mg. of radium, screened with 2 mm. of lead, over the whole splenic area. She was reported quite well in December, 1914.

Adenoma of the Thyroid

A few cases of this condition have been treated during the past 12 months, the patients being unwilling to submit to operation. In all cases some benefit resulted, and in two the improvement was very marked, the swelling shrinking to less than half size. The treatment has been the same in all instances, powerful flat applicators screened with 2 mm. or 1·5 mm. of lead being applied to the surface of the growth in such a manner as to procure an effective "cross-fire" irradiation. A series of exposures on five successive days, amounting in all to 30 hours, has been given, repeated if necessary at intervals of six weeks or two months.

Fibroid Disease of the Uterus.

Radium exerts a most beneficial action upon the distressing symptoms of menorrhagia and metrorrhagia, which are the almost invariable concomitants of this condition, and occasionally produces considerable diminution in the size of the uterus. As the cervical canal is rarely sufficiently patulous to admit a screened radium tube without previous dilatation, and patients are often averse from this, the treatment may be carried out by the introduction of a tube containing 100 mg. of radium, screened with 2 mm. of lead, into the posterior fornix, and the application of a plate of from 80 to 100 mg. similarly screened over the fundus uteri. The total exposure should be between 30 and 60 hours, spread over from 5 to 10 days, and the series should be repeated after six or eight weeks. The first effect noted is the checking of the metrorrhagia, and this is followed by a progressive decrease of the menorrhagia until the flow becomes normal, or sometimes ceases altogether. If any leucorrhœa exist this, too, is much diminished in amount, and not infrequently completely disappears.

Cases of *obstinate leucorrhœa* and *vaginal polypi* have been treated with complete success.

Nævi.

Flat Superficial Nævi, Capillary Nævi, "Port Wine Stains."—Before expressing an opinion as to the possibility of radium treatment effecting an improvement in any particular instance, it is advisable to subject the lesion to diascopy. If blanching is readily effected by gentle pressure the result of the treatment will probably be satisfactory; but if it be found impossible to produce blanching except by great pressure it is unlikely that radium can do much for the condition. The best results can be looked for when the nævus is quite superficial and shows no tendency to infiltration. If much infiltration exist the treatment will have to be much more vigorous, and a destructive reaction of slight degree produced. A smooth, supple, and white scar will be left.

Cavernous nævi.—These do excellently under radium, especially when of such shape that "cross-fire" radiation is possible. Half-strength applicators screened with 1/10 mm. of lead should be employed, and the exposure should be from one to three hours' duration, spread over three successive days. Little or no surface reaction is produced by this method of treatment, and the nævus shrinks gradually and steadily. If on palpation the presence of a pulsating vessel is appreciable, the case is not likely to prove completely successful unless the vessel first be ligated.

Warts and papillomata yield readily to exposures, with half-strength apparatus unscreened, of from 30 minutes to two hours' duration, according to the size and thickness of the lesion. The reaction is but slight and the resultant scar scarcely noticeable.

Tuberculosis.

Tuberculosis of glands.—In cases in which surgical measures have been declined for cosmetic reasons radium often proves of considerable value, either when used alone or as an adjunct to vaccine treatment. Heavily screened exposures of 20 or more hours' duration should be resorted to and an effort made to secure "cross-fire" irradiation where practicable. If the glands be caseating, radium treatment is of very little use.

Lupus vulgaris.—As a routine treatment for this disease Finsen light is greatly to be preferred to radium, but where it fails to effect a cure or improvement radium sometimes proves of great use. Unscreened exposures of one or two hours' duration must be given and a destructive reaction produced. The resultant scar is usually firm, smooth, supple, and inconspicuous.

Spring Catarrh.

In this condition the employment of radium is strongly to be advocated, as it will sometimes cure the most intractable cases. Personal idiosyncrasy is, however, a very important

consideration, and it is essential to proceed with great caution, giving short unscreened exposures at intervals of a fortnight, and carefully noting the reaction. If the dosage be accurately adjusted the granulations on the orbital conjunctiva gradually disappear, there is no marked inflammation and no resultant scarring of the mucous membrane.

Skin Diseases.

Keloid.—This condition continues to give most excellent results when treated with radium, and a great improvement, if not complete cure, can be safely predicted when the condition is of recent origin and occurs in young subjects. In tender and painful keloids the anæsthetic effect of radium is generally very marked and appears early in the treatment. Half-strength applicators screened with 1 mm. of silver are almost always employed, and an exposure of from 18 to 30 hours spread over from three to five days, according to the size and thickness of the lesion, is given. This brings about a gradual absorption of the keloid unaccompanied by any surface irritation. If, however, time be of importance, or the keloid prove refractory, screening of ½ mm. of silver or 1/10 mm. of lead may be employed, though the reaction is likely to be definite and accompanied by vesication.

Lupus Erythematosus.—In early cases of this disease, which have not been subjected to much other treatment, one or two exposures not exceeding an hour in duration with a half-strength apparatus, unscreened or screened with 1/100 mm. of aluminium, may suffice to bring about the disappearance of the lesion. Care should be taken to ensure that the applicator employed is sufficiently large to reach well beyond the borders of the patch treated.

Lichenification of the Skin.—Patches of lichenification almost invariably yield to one treatment of ten minutes' duration with a half-strength applicator, unscreened or screened with 1/100 mm. of aluminium. The attendant intolerable itching is often markedly alleviated within 60 hours of the exposure. Some very obstinate cases which have hitherto defied all the usual methods of treatment have responded most favourably to this procedure, the lesions have disappeared and have not recurred.

Pruritus.—The analgesic effect of radium is often of the greatest use in this disease, and short unscreened exposures frequently produce a degree of relief which is unattainable by any other measures. This is especially noticeable if the pruritus occur in association with a definite lesion such as leucoplakia or hyperkeratosis.

Angio-neurotic Œdema.

Three patients suffering from this condition have received treatment during the past year. In one instance a cure has apparently been effected; in the other two considerable benefit has been obtained. In view of the comparative rarity of this malady and its intractability to most methods of treatment the particulars of all these cases are given. These notes will be well worth studying in the complete report by those who are interested in this condition.

Arthritis Deformans.

The daily administration of 250 c.c. of radium emanation solution of a strength of not less than 1 millicurie per litre to patients suffering from this obstinate, painful, and crippling disease is sometimes attended by very remarkable results. It is difficult to predict with certainty the degree of improvement likely to occur in any particular instance, but the cases which appear to derive most benefit are those in which the disease is of relatively short duration, and the changes are periarticular in type and multi-articular in distribution. The age of the patient also exerts some influence, those under 40 responding more quickly to the action of the emanation. Cases with a definite gouty history sometimes experience an acute exacerbation of all their symptoms within the first week or ten days of their treatment, but this disturbance is quite transient, and is usually followed by a distinct change for the better. Little or no improvement can be looked for in instances where cartilaginous or osseous changes are predominant, and the radium emanation solution is powerless to bring about the absorption of osteophytic growths or the loosening of bony ankylosis. When limitation of movement is due to periarticular fibrous thickening considerable increase of mobility often follows on the taking of the radium water, and enables patients to perform actions, such as feeding themselves, brushing their hair, shaving, &c., which they may have been powerless to do for some months or even years.

Other favourable effects of the treatment are that the muscular and articular pains are lessened or disappear, the grating of the joints on movement is not so marked, the muscles regain much of their lost tone, and the patient's general health is much improved. This is especially noticeable when the patients are suffering from anæmia, the hæmoglobin index being rapidly increased. The treatment must, however, be persisted in for quite a long time, and at least six weeks are likely to elapse before any change is noted. With the majority of patients the emanation solution produces a definite diuresis, and with a few it acts as a slight laxative, though free purgation has never been observed. Much research work has yet to be undertaken to enable an accurate opinion to be formed of the manner in which radium emanation solution produces these results, as its action appears to be a multiple and highly complex one, but the reinforcing of the body ferments, the increase of tissue oxidation, and the dissolving of uric acid are probably factors which contribute to its success.

Prophylactic Irradiation.

Since the opening of the Radium Institute in August, 1911, numerous patients who have undergone operation for malignant disease have received post-operative prophylactic irradiation. It would be exceedingly difficult, if not impossible, to make any statement as to the precise value of radium treatment in preventing or minimising the danger of recurrence, but as the majority of these patients had suffered from extensive, severe, and rapidly progressive malignant disease, and the operators had expressed grave doubts as to the probability of their remaining free from the disease for more than a few months, the relatively slight proportion of recurrences so far recorded (19 per cent.) does much to justify the routine adoption of post-operative irradiation. It should prove of especial service in those cases of malignant growth in which it has been found impossible to operate well beyond the appreciable area of the disease.

In conclusion, Mr. Hayward Pinch expresses his great indebtedness to his senior assistant, Dr. J. E. A. Lynham, for most valuable help in the compilation of this report. Dr. Lynham was solely responsible for the planning and carrying out of the treatment of many of the cases herein recorded.

RADIUM TREATMENT AT THE ROYAL INFIRMARY, EDINBURGH.

Dr. Dawson Turner's report on the work done in the radium department of the Royal Infirmary Edinburgh, during the year 1914 has just appeared, and is full of suggestive information.

There attended for radium treatment during the past year 63 patients; of these, 36 were in-patients and 27 were out-patients. Thirty-four of the patients suffered from, in all but one case, inoperable malignant disease, 23 of these from carcinoma and 11 from sarcoma. There were 12 cases of rodent ulcer, 6 of exophthalmic goitre, 2 of otosclerosis, 1 of middle-ear deafness, 1 of Paget's disease, 1 recurrent wen, 1 simple tumour, 1 nævus, 1 leukoplakia, 1 warty tumour, and 1 hypertrophied tonsils. Though a cure was not effected in any of the malignant cases, nor considering their advanced nature was it to be expected, yet in practically all of those who were treated more or less benefit was produced by the relief of pain, the cessation of discharges, the healing of ulcerated surfaces, the removal of local growths, and the prolongation of life. In some of the cases radium was used as a prophylactic after the surgical removal of a growth, and sufficient time has not yet elapsed to ascertain its effect. Remarkable results were produced in some of the malignant cases; thus an epitheliomatous growth was entirely removed, first from the posterior wall and then from the anterior wall of the vagina, so that not a trace of it remained; there has, however, been a recurrence which is being treated. In a rapidly growing periosteal sarcoma of the lower end of the femur in a boy aged 13 the application of radium caused the growth to shrink and to become dense, hard, and fibrous, so that whereas, to use the words of the surgeon, Mr. J. W. B. Hodsdon, it bled like an aneurysm on the first introduction of radium, two months later, on a second introduction, it scarcely bled at

all, and it was so hard and dense that it was only with difficulty that the radium could be inserted. This was an illustration of the well-known effect of radium in converting a sarcomatous growth into a fibrous one. Malignant disease of the buccal cavity, the pharynx, larynx, and posterior nares appears to be less amenable to radium, but this may be partly due to the difficulty of administering a sufficient dose in such positions.

The beneficial effect of radium in rodent ulcer is now well recognised. Of the 12 cases treated during the year, 9 were easily cured, the remaining 3 have not yet been long enough under treatment for the effect to be produced. In each case the cosmetic result leaves no room for improvement. In small superficial rodent ulcers a single application may be sufficient, but it is important in order to prevent a recurrence that the deeper parts as well as the superficial should be adequately treated. Several of the cases had previously received without sufficient benefit applications of carbonic snow or large doses of the X rays. Though this may render them, as the Radium Institute reports indicate, more refractory to radium, yet none of those treated during the past year have failed to yield to it.

In the six cases of exophthalmic goitre treated during the year radium was of undoubted benefit, in one case apparently bringing about a definite cure. Its action consists in producing a sclerosis of the thyroid gland following upon an obliterative endarteritis. As the treatment of this condition by radium was novel great care had to be exercised in the earlier cases by giving small doses and keeping careful observation of the patients. Larger doses, which more rapidly produce a beneficial effect, are now administered. A diminution in the exophthalmos and tachycardia are amongst the first results to be observed.

The following is a summary of the cases, excluding the rodent ulcers:—

1. An advanced case of sarcoma under the left eye, with abscesses and an opening into the antrum of Highmore. A dose of 2280 mg.h. was given with temporary benefit.

2. A case of recurrent epithelioma following lupus in a male aged 41, recommended by Mr. D. Wallace. Growth affecting the region beneath the right ear was removed by Mr. Wallace, healed well, except a small patch which healed after a dose of 240 mg.h. of radium. Five months later a recurrence below, into which three tubes of radium were inserted and removed after a dose of 5040 mg.h. Six weeks later Mr. H. Wade reported a great improvement, the growth having practically disappeared. A few weeks later a recurrence occurred above, and radium treatment was given up.

3. Sarcoma of the scapula in a female aged 29, recommended by Mr. A. Miles. Radium used prophylactically after surgical removal of the scapula and inserted anteriorly. A dose of 360 mg.h. only was given owing to the proximity of the subclavian vessels. Three weeks later a rapidly growing recurrence higher up, not where the radium had rested. Two tubes were inserted into the recurrence and a dose of 2520 mg.h. given. A peculiar feature of this case was that the temperature of the patient always fell, and remained down during the radium applications. The radium relieved the patient's pain, which had been constant, but the patient rapidly sank.

4. Recurrent scirrhus in a female aged 37, recommended by Mr. Miles. Breast removed in August, 1912. Some time afterwards a swelling began over the sternum. On admission on Feb. 3rd, 1914, there was a large swelling over the sternum, measuring 3 by 2½ inches, and projecting about 1½ inches. A tube was introduced into the growth and radium applied externally in different positions shielded by 1 mm. of silver. The dose amounted to 5270 mg.h. Six months later the growth had disappeared. Photographs had been taken before and after treatment. Two months later two recurrences, one to the right, one above. A dose of 5700 mg.h. was given, with the result that the swellings were markedly reduced. This patient has ceased to attend.

5. A recurrent carcinoma of the rectum in a female aged 27. An aluminium tube containing radium was placed in a rubber tube and attached to a twisted silver wire. This was introduced so as to lie against the ulceration, and a dose of 1080 mg.h. administered. Mr. Hodsdon considered that this treatment was beneficial; the induration became less and pain was diminished. The patient went home and has not since attended for more treatment.

6. A large epithelioma of the lower jaw unsuitable for radium treatment.

7. An epithelioma of the lower lip in a male aged 55, recommended by Mr. C. W. Cathcart. The diseased area was about the size of a filbert nut; there was a crack in it above, but the mucous membrane was not invaded. A dose of 400 mg.h. was administered. Dismissed three weeks later greatly improved. Told to return in three weeks, but did not do so for many months, when the condition was so much worse that an operation had to be performed. The case was one which would probably have entirely yielded to radium had the treatment been persisted in.

8. Secondary metastatic sarcoma in a female aged 27, recommended by Professor Alexis Thomson. Eight days after the growth had been removed from the back of the neck a tube of radium was introduced into the wound and a dose of 960 mg.h. administered. A year later her family doctor, Dr. T. P. Gemmell, wrote to say that he had examined her and could find no hardness or swelling near the cicatrix, and that she had made a marvellous recovery after we had expected her cure impossible.

9. Epithelioma of the vaginal walls in a patient aged 40, recommended by Dr. A. H. F. Barbour. Duration some months, pain and watery discharge. There was a raised warty growth over upper two-thirds of posterior vaginal wall, also in anterior fornix. Microscopic examination showed it to consist of a squamous-celled epithelioma. Operation inadvisable owing to risk of a rectal fistula. 15 mg. of radium protected by 1 mm. of silver were fastened into a speculum and introduced so as to be in contact with the warty growth. A dose of 384 mg.h. was given. Six weeks later the patch was smaller and there was less discharge. 25 mg. of radium in an aluminium tube were attached to a pad protected on the upper surface by lead foil and placed in contact with the growth. A dose of 1050 mg.h. was given. Some local peritonitis and lung trouble followed. In four months' time when the patient returned no trace of the disease could be found on the posterior vaginal wall, but there was a decided plaque-like growth on the anterior wall. 20 mg. of radium protected by silver, 1·3 mm. thick, were placed against the growth and left in, except for douching, for seven days; dose 3200 mg.h. Six weeks later the growth had disappeared except for a trace in the anterior fornix. Two months later she returned with a hard lump on the anterior wall. The growth was rapidly increasing. By the application of 30 mg. of radium in aluminium a dose of 5060 mg.h. was given. A month later she returned complaining of pelvic pain, rectal discomfort, and discharge. On examination under chloroform the posterior vaginal wall, where the original growth had been, was found to be thickened, indurated, and grey coloured. The anterior wall presented the same appearance. Immediately below the cervix was a growth of the size of a gooseberry. The pathologist reported that this showed very extensive necrosis, so that it was impossible to recognise what the original tissue was. The patient is being kept under observation.

10. A rapidly growing recurrent sarcoma of the right orbit, very vascular. A case of Dr. Sims. A dose of 1920 mg.h. was given, but the patient died a few days later with head symptoms.

11. A scirrhus of the left breast in a patient aged 75, recommended by Mr. F. M. Caird. There was a hard tumour with an ulcerating crack and the glands were involved. To relieve pain a dose of 120 mg.h. in aluminium was given to the crack. The pain was relieved and there was great local improvement. The patient ceased to attend.

12. A fibrosarcoma of the right side of the neck in a man aged 34, a patient of Mr. J. W. Struthers. Duration six years. Aching pain. Neck circumference 17½ inches. 20 mg. in aluminium inserted through an incision and a dose of 5400 mg.h. given. Six weeks later growth no smaller, but more movable; pain removed. A large, fresh, deep incision showed a softened area where the tube had lain. Microscopically there were areas of necrosis round the positions in which the radium had been. By means of another tube a dose of 3840 mg.h. was given. Considerable reaction with a discharging sinus followed. Four months later the growth was found to be much smaller and more movable. Patient has ceased to attend.

13. A myeloid sarcoma of enormous size of the side of the face and back of the head in a man aged 54, recommended by Mr. J. W. Dowden. As a palliative a dose of 3360 mg.h. was given.

14. Recurrent carcinoma recti in a female aged 54, recommended by Mr. Hodsdon. Previous operation a year ago, colotomy performed, rectum removed. Now a fistula into the vagina, constriction, tenderness, and pain. 20 mg. in aluminium introduced and a dose of 3840 mg.h. given. Considerable amelioration followed with relief of pain.

15. Recurrent scirrhus in a woman aged 47, a patient of Mr. Caird. As the disease was very extensive the patient was recommended for X ray treatment.

16. Recurrent carcinoma of bowel round a colostomy opening in a female aged 41, recommended by Mr. Cathcart. Diabetic. A tube was inserted into the growth, but ulcerated out in three days. The patient died with head symptoms.

17. Sarcoma of tonsils in a man aged 50, recommended by Dr. Logan Turner. Four months' duration. Could not open mouth much or swallow solids. An ulcerating mass chiefly on right side. 20 mg. in an aluminium capsule at the end of a rod were held for some eight hours a day by the patient

close to, but not actually touching the ulcer. After a dose of 1310 mg.h. the patient ceased to attend. No beneficial effect, except that the ulcer appeared to get cleaner, was observed.

18. Carcinoma of cervix and vagina, advanced ulcerating, in a female aged 49, recommended by Mr. N. T. Brewis. 20 mg. in aluminium and rubber were placed in contact with the growth, and a dose of 3500 mg.h. given. This removed the agonising pain from which the patient suffered, but she died within a week of the radium treatment.

19. Inoperable carcinoma of the floor of the mouth in a man aged 70, a patient of Mr. Miles. Case unsuitable for radium treatment.

20. A case of recurrent sarcoma of the femur in a female aged 23, recommended by Professor Thomson. After amputation above the knee-joint two tubes of radium were inserted and a prophylactic dose of 3360 mg.h. was given. Eight months later her medical man reported that she was going on very well indeed.

21. A recurrent scirrhus in a female aged 70, recommended by Mr. Scott Carmichael. The first operation 19 months earlier; steady pain since. Second operation, June 26th, 1914, when a lump was removed and a tube of radium inserted as a prophylactic. Dose 1440 mg.h., aluminium screen. On being asked to report herself in January, 1915, the patient wrote to say that she was too ill to attend.

22. A male suffering from a malignant enlargement of the cervical glands on both sides. Considered unsuitable for radium treatment.

23. Epithelioma of the upper lip, invading the mucous membrane, in a male aged 58, recommended by Dr. F. Porter. Taken to see Mr. Cathcart who advised an operation.

24. Epithelioma of the left tonsil of eight months' duration in a male aged 41, recommended by Mr. Cathcart. Cervical glands enlarged. 20 mg. of radium in a capsule were held by the patient against the affected area daily, screened by aluminium, until a dose of 1065 mg.h. had been given. Considerable sloughing followed, but no improvement of any consequence. Patient was referred back to Mr. Cathcart.

25. Recurrent epithelioma of the upper jaw in a male aged 46, recommended by Mr. Hodsdon. Two years ago first operation. Now a hard mass growing in a cavity above his dental plate. By means of some radium attached to the end of a wire which the patient held against the growth, a dose of 600 mg.h. was administered. Screen aluminium. The patient ceased to attend.

26. Advanced case of paraffin epithelioma of the right hand in a man aged 57, recommended by Dr. A. Steven. Patient being sent to Mr. H. Wade for advice an operation was suggested.

27. Recurrent periosteal sarcoma of the left knee in a male aged 23, recommended by Professor Thomson. Previous operation four years earlier. Now there is a swelling of the size of a small egg, which Professor Thomson excised, and at the same time inserted 20 mg. of radium in aluminium. A dose of 2880 mg.h. was administered. Six months later his medical attendant wrote to say that there was no recurrence and that the leg was regaining strength.

28. Periosteal sarcoma of the lower end of the femur in a boy aged 13. The parents refused operation. Duration five months; immobility, pain, and swelling. Greatest circumference of knee 13 inches. On Sept. 22nd, 1914, Mr. Hodsdon made an incision and inserted 30 mg., contained in two aluminium tubes, into the swelling. Blood gushed from the growth as though it were an aneurysm. Radium, shielded by silver 1 mm. in thickness, was also applied externally. The position of the internal tubes and of the external capsules was shifted from time to time. A total dose of 8760 mg. hours was given. The boy was sent home. In two months' time, when he returned, it was observed that the swelling had diminished in size, the pain had disappeared, the part was less tender, and he could move it more freely. It had been growing rapidly. By a fresh incision a tube was pushed down deeply so as to be in contact with the bone. The part incised scarcely bled at all, and the tissues had become hard and fibrous, making it difficult to introduce the tube. A dose of 3840 mg.h. was administered. The knee now became more swollen and tender and the temperature rose. It was evident that the contact of the radium tube with the diseased bone was setting up a severe reaction. The boy shortly afterwards returned home. Six months later his medical adviser wrote to say that the right lung was affected and that the patient was sinking. The knee remained *in statu quo*, but was discharging pus from the cavity in which the tube had lain. The radium appeared to have stopped the local growth, but had not prevented a metastasis.

29. A case of epithelioma following lupus erythematosus and excessive X ray treatment affecting the chin in a woman aged 67, recommended by Dr. F. Gardiner. Case unsuitable for radium treatment.

30. Case of epithelioma of the vulva in a patient aged 61, recommended by Dr. Barbour. Case unsuitable for radium treatment except after an operation.

31. Recurrent metastatic sarcoma of right side of the chest in a male aged 35, recommended by Sir Robert Philip. Case unsuitable for radium treatment.

32. Case of exophthalmic goitre in a female aged 28, recommended by Professor Lovell Gulland. Swelling of neck began in August, 1913, but the patient had been getting weaker before then. On admission, tachycardia (140), marked exophthalmos, tremulous, sweating, glycosuria. In March, 1914, patient was given, by external application through silver 1 mm. thick, a dose of 360 mg.h. to the thyroid. On April 24th she returned much better. Gave her a dose of 400 mg.h. On Sept. 14th the pulse was 80, exophthalmos less, better in every way. Gave her a dose of 540 mg.h. On Oct. 17th gave her a dose of 400 mg.h. On Dec. 23rd she returned practically restored to health; pulse 70, no exophthalmos, thyroid cannot be palpated. Professor Gulland writes in reference to this and another case: "This case had a considerable number of applications at long intervals, and has immensely benefited thereby. She has, in fact, within a year returned to normal—an unusually good result. The second case has had only one application and naturally did not do so well, though she also greatly improved."

33. Exophthalmic goitre in a female aged 27, recommended by Dr. F. D. Boyd. Duration three years. Breathlesness, nervousness, tremor of hands, pulse 120, thyroid enlarged, exophthalmos slight. This patient was given a total dose of 1750 mg.h., administered as in the last case. On Jan. 15th, 1915, Dr. Boyd wrote: "The patient seems to have benefited very much from radium, and I think a second dose would be very desirable."

34. Exophthalmic goitre in a woman aged 32, recommended by Professor Gulland. A mild case of three months' duration. Slight exophthalmos, weakness, nervousness, palpitation, œdema, thyroid slightly enlarged. Medicinal treatment so far unavailing. A dose of 600 mg.h. administered externally, as in the last case. This is the second patient referred to in Professor Gulland's letter, in which he described her as being greatly improved. The other three cases of exophthalmic goitre were only given treatment at the end of October, and they have not yet returned to report themselves.

Two cases of otosclerosis and one of middle-ear deafness were treated with radium during the year. They are as follows:—

35. A female aged 52, recommended by Dr. J. S. Fraser. Deaf for 25 years and regarded as hopeless. Dr. Fraser writes: "The raised voice before treatment could only be heard at 6 inches in both ears. After six applications of radium (dose 106 mg.h.) there was no improvement, and the patient stated that the noises had been worse. The raised voice was only heard at 4 inches in the ear which had been treated. This was a case of advanced otosclerosis."

36. Case of early otosclerosis in a female aged 22, recommended by Dr. Fraser, who writes regarding her as follows: "She had been slightly deaf since childhood. Before radium treatment the low voice was heard at 1 foot in the right ear. Radium treatment was commenced in February, 1914. I saw the patient again in May, after she had had a dose of 125 mg.h. of radium, and was suffering from a considerable amount of dermatitis of the external meatus on the right side, probably due to the radium. I saw her for the last time on Nov. 6th, 1914, and found that the right meatus had quite healed. The hearing was about the same as before—viz., low voice at 1 foot."

37. Case of middle-ear deafness in a female aged 45, recommended by Dr. Fraser, who writes as follows: "Patient had been deaf for ten months and complained of noises in the ears. Before radium treatment the raised voice was heard at 1 foot by the left ear. After a dose of 55 mg.h. she stated that the noises were not so bad as before. The voice was heard at about 18 inches by the left ear. I do not think that the difference between 1 foot (before treatment) and 18 inches (after treatment) is of any importance, as a small difference in hearing like this might easily be due to the room being more quiet or to the voice used being rather louder. In conclusion, I am afraid we must report that these cases of chronic progressive middle-ear deafness have not benefited from radium treatment, but this was only to be expected."

38. Case of nævus of the scalp in an infant aged 1 year, recommended by Mr. D. Cotterill. Had been treated by injections of carbolic acid and glycerine. There was a scab in the centre and a raised red ring around. A dose of 115 mg.h. was sufficient to cure this condition.

39. Paget's disease in a female aged 72, recommended by Mr. Miles. To right of nipple was a well-defined crescentic area, red, slightly elevated, and hard. Glands not palpable. Nipple normal. A dose of 1200 mg.h. was administered, guarded by silver and cork so as to spread the effect. The patient has not reappeared for treatment.

40. Warty tumour in a girl aged 18, recommended by Dr. G. Ogilvie. Duration about two years. Has had nitric acid and other applications without benefit. On the left cheek is a wart the size of a threepenny-piece, considerably elevated above the surface. Radium treatment begun on March 24th, 1914, and a dose of 58 mg.h. administered. On June 2nd, 1914, the wart was found to have disappeared and the skin to be practically normal.

41. Leukoplakia. As this case was only admitted for treatment in December, 1914, it is too early to make any report upon

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE undermentioned have been granted temporary commissions as Surgeons in His Majesty's Fleet: William Bell, J. Westwood, Samuel F. Abbott, Edgar William Todd, Clive Nelson Pitt, and Benjamin Lewitt.

The following appointments have been notified:—F. H. Rees to the *Vivid*, additional, for Plymouth Hospital; S. Worthington and H. G. Moser to the *Victory*, additional, for Haslar Hospital; and R. W. Townley to hospital ship *China*.

ROYAL NAVAL VOLUNTEER RESERVE.

Surgeons: T. D. McEwan and E. J. Steegman, both to the *Pembroke*, additional, for disposal.

ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel Alfred Blenkinsop, on appointment as Assistant Director-General, Army Medical Service, to be supernumerary (dated Oct. 29th).

The undermentioned to be temporary Captains:—Dated Feb. 24th: Temporary Lieutenants John Francis O'Malley and Lanyon Edward Owen.

Lieutenant-Colonel William E. Berryman is retained on the active list under Article 120, Royal Warrant for Pay and Promotion, and to be supernumerary (dated Feb. 22nd).

Captain Claude M. Rigby is seconded for service on the staff of the Governor of Bombay (dated Jan. 5th).

Laurence Maclagan-Wedderburn to be temporary Captain (dated Feb. 5th).

The undermentioned to be temporary Lieutenants:—Dated Jan. 23rd: Norman Black. Dated Jan. 25th: Alexander Fleming Wilkie Millar. Dated Jan. 28th: James Patrick Lavery, Walker Stewart Lindsay, Josiah Russell Turner, George Davidson, and George Theodore Cregan. Dated Jan. 29th: John Adam Gib Burton. Dated Jan. 30th: Alfred Castle Warren, John Robert McGilvray, Hubert Samuel Stockton, Frank Reginald Featherstone, Charles de Chanval Pellier, Vivian Percival Foote, and Delbert Evans. Dated Feb. 1st: Frederick Patrick Walsh, Geoffrey Fildes, Henry Wardel Snarey Wright, Edmund Claud Malden, William Kenneth Armstrong Richards, Charles Roche, John Wesley Gilbert, Sidney Howard Browning, Kenneth Playfair, James Henry Bampton, Frederick Rosenberg Harris, Thomas Arnold Watson, Thomas Louis Enright, Henry Holman Weekes, John Warnock Bingham, Arthur Harold Wilson, Arthur Geoffrey Pattison Hardwick, William Joseph Burns Selkirk, Robert Murray Fraser, John Reid Forde, Frank Sholl Scott, Herbert Temple Lukyn-Williams, William Deanburn Dunlop, Thomas Howard Frederick Roberts, David Wilson, George William Blomfield James, Francis Joseph Henry, Charles O'Brien, Kenneth Duncan Cameron Macrae, Bernard Rayne Parmiter, James Wilfred McKinney, Ernest Tawse, James David Forrester, Graham Smith, John Perrin Brown, Arthur Robertson Wightman, Reginald Arthur Morrell, Harold Axel Haig, Norman Duggan, Sidney Bertram Radley, Douglas Erith Derry, Lomond Charles Dillon-Kelly, Cecil Francis Dillon-Kelly, Eugene Patrick Leahy, Francis Percival Halkyard, Robert Tindall, Thomas MacKnight Watt, Robert Henry Liscombe, Frank Lee Cleland, Archibald Fullerton, Ernest Eugene Herga, William Anderson Coats, Theodore Essex Roberts, Richard Robins Armstrong, and Alexander Nelson Craig. Dated Feb. 2nd: Malcolm Gross, Arthur Wandesford Comber, and William Anderson. Dated Feb. 3rd: Adrian St. Johnston and Duncan Metcalfe Morison. Dated Feb. 4th: Claude Emery Freeman, Herbert Smith, and William Barwise Sanders. David John Jones, and Charles Herbert Gouldsmith Prance. Dated Feb. 5th: Horace James Gater, George Galen Bartholomew, and Franke Chamberlain Hart-Smith. Dated Feb. 6th: Walter Randall Knightley, Philip Maynard Heath, Sydney Boyd Faulkner, Archibald Hamilton Jacob, Henry Beveridge Smith, Joseph Caton-Shelmerdine, Edward Longueville Mansel, Harold Charles Harrison, and Alfred Edward Seller. Dated Feb. 7th: Harold William Wilson, Thomas Pearson Herriot, Archibald Cowe, John Edgar Davies, John Campbell Neil, John Kelly, William MacLeod, Francis Edgar Sprawson, Oliver Beakley Pratt, Tom Watson Wadsworth, Edward Henry Fennessy, Stanley Thorpe Lewis, Drevor Frederick Acton Neilson, and Leonard Hankinson Terry. Dated Feb. 8th: William Henry Croly, Thomas Edwin Hammond, Griffith Llewellyn Jones, Percy Lytton Tempest Bennett, John Hamilton Boag, Charles George Gordon Keane, William Francis MacAlevey, Kenneth Montague Nelson, Arthur Henry Towers, Henry Strawson Turner, Philip Pennefather Warren, Patrick William White, Arthur James Bruce Leckie, Hugh Gwilym Morris, Maxwell Ramsay, and Charles Rowley Nicholson. Dated Feb. 10th: Abram Leach, Andrew Richmond Douglas, Francis Percy Evers, Arthur Loudoun Taylor, William Campbell, Joseph Marmion, Laurence Unthank Geraty, George Leggat, Christopher Robson Dudgeon, Frank Hamersley Woods, Llewellyn McIntyre Weeks, John Macintyre, Harold Esmond Arnison Boldero, Cedric Sydney Lane Roberts, Henry Albert Gillespie, Henry Carson Duffy, Lennox Ross Broster, James Patrick Fitzpatrick, Louis Thomas Eden, Eric Stewart Marshall, James Ingram Pirie Wilson, Henry George Frean, and Patrick Ashe.

OVERSEA CONTINGENTS: CANADA.

Colonel Guy C. Jones, Director-General of Medical Services, Canada, to be temporary Surgeon-General (dated Jan. 26th).

SPECIAL RESERVE OF OFFICERS.

Royal Army Medical Corps.

Captain George H. Usmar resigns his commission. Captain Thomas Douglas Inch, from the Unattached List, Territorial Force, to be Lieutenant.

The undermentioned Lieutenants are confirmed in their rank:—Frederick Sanders, George S. Pirie, Howell M. Williams, William D. Anderton, Edwin J. Bradley, Frank Oppenheimer, James W. Wood, and George M. Scott.

The undermentioned to be Lieutenants (on probation):—Edward Waller Mann, ex-Cadet of the Officers Training Corps, and William Theodore Hare.

TERRITORIAL FORCE.

Army Medical Services.

Colonel de Burgh Birch, C.B., Retired List Territorial Force, to be Assistant Director of Medical Services, West Riding Reserve Division.

Royal Army Medical Corps.

1st South Midland Mounted Brigade Field Ambulance: Captain Douglas M. Spring to be Major (temporary).

4th London Field Ambulance: To be Lieutenants: Leslie Price Harris and George Brentnall Pritchard.

3rd South Midland Field Ambulance: Major Bertram M. H. Rogers to be Lieutenant-Colonel (temporary).

2nd London Casualty Clearing Station: Captain Claude H. S. Frankau, from the 4th London General Hospital, to be Captain.

2nd Lowland Field Ambulance: James Angus to be Lieutenant.

3rd North Midland Field Ambulance: To be Lieutenants: William Batten Williams and George Fanning Denning.

3rd West Riding Field Ambulance: Surgeon-Captain William Smith Kerr, from the 4th (Hallamshire) Battalion York and Lancaster Regiment, to be Captain.

1st London (City of London) Sanitary Company: Constant Wells Ponder to be Lieutenant.

2nd South Midland Mounted Brigade Field Ambulance: Alfred Goodman Levy to be Lieutenant.

2nd East Anglian Field Ambulance: Edmund Albert Goulden to be Lieutenant.

2nd London (City of London) General Hospital: Captain Charles A. Lees to be Major on the permanent personnel.

3rd Southern General Hospital: Fielding Clarke to be Captain, whose services will be available on mobilisation.

1st London (City of London) Field Ambulance: Roger Papillon Stewart to be Lieutenant.

1st East Anglian Field Ambulance: Captain William James Hoyten, from Attached to Units other than Medical Units, to be Captain.

2nd Western General Hospital: Thomas Pomfret Kilner to be Lieutenant.

Attached to Units other than Medical Units.—Surgeon-Major Bertram Addenbrooke, from 7th Battalion, The Worcestershire Regiment, to be Major. To be Captains: Honorary Captain Arthur Ricketts, C.M.G., Lieutenant Charles D. Mathias (temporary), and Captain Francis Rowland (from the 6th London Field Ambulance). To be Lieutenants: Hugh Arthur Sandford, Ivan William McKinnon, Ernest Osborne, Frederick George Vicars, Kenneth John Taylor Keer, John James Egerton Biggs (late Captain 7th (Cyclist) Battalion, the Welsh Regiment), and Henry Frederick John Graves. Captain Ellerington Reed Turner resigns his commission on account of ill-health.

COLONIAL MEDICAL SERVICES.

West African Medical Staff.—The death is reported of Dr. J. Atkinson. The following have been transferred on promotion: Mr. H. B. S. Montgomery, Provincial Medical Officer, Gold Coast, to Nigeria as Deputy Principal Medical Officer; Dr. J. W. Collett, Senior Medical Officer, Sierra Leone, to Nigeria as Provincial Medical Officer; Mr. D. Burrows, Senior Medical Officer, Nigeria, to Sierra Leone as Provincial Medical Officer; Mr. E. C. Adams, Medical Officer, Nigeria, to the Gold Coast as Senior Medical Officer; Mr. T. F. G. Mayer, Medical Officer, Gambia, to Sierra Leone as Senior Medical Officer; and Mr. F. J. A. Beringer, Medical Officer, Gold Coast, to Sierra Leone as Sanitary Officer. Dr. E. W. Graham, Senior Medical Officer, Gold Coast, has been promoted to be Provincial Medical Officer. Mr. T. B.

Adam, Captain J. B. Bate, R.A.M.C. (T.F.), Mr. G. Hungerford, Dr. G. R. Twomey, Dr. R. W. Gray, Mr. E. H. Tipper, and Mr. H. G. McKinney, Medical Officers, Nigeria, have been promoted to be Senior Medical Officers. Dr. F. S. Harper, Mr. C. D. Ralph, and Dr. C. V. Le Fanu, Medical Officers, Gold Coast, have been promoted to be Senior Medical Officers. Mr. C. H. Allan, Medical Officer, Sierra Leone, has been promoted to be Senior Medical Officer. Mr. A. C. Lorena, Medical Officer, Gold Coast, has been promoted to be Sanitary Officer. *Retirements*: Mr. M. F. Ellis (on pension), and Dr. B. Knowles. *New appointment*: Dr. E. B. Bate (Gambia). The services of the following officers have been placed at the disposal of the War Office: Captain J. B. Bate, R.A.M.C. (T.F.); temporary Lieutenant D. T. Birt, R.A.M.C.; and temporary Lieutenant G. J. W. Keigwin, R.A.M.C. The services of the following officers have been placed at the disposal of the Admiralty: Temporary Surgeon M. B. Hay, R.N.; and temporary Surgeon J. C. Watt, R.N.

Other Colonies and Protectorates.—Dr. C. M. Rolston has been selected for appointment as a Supernumerary Medical Officer in the Leeward Islands; Dr. J. H. Rankin has been selected for appointment as temporary Medical Officer in St. Lucia; Dr. A. MacDonald, medical officer of health, Kingston, Jamaica, has been selected for appointment as Medical Officer in charge of ankylostomiasis work in Grenada; Dr. F. T. Auden has been selected for appointment as District Commissioner and Medical Officer at Caicos in the Turks and Caicos Islands; Mr. J. G. Lessey has been selected for appointment as Resident Surgeon of the Colony Hospital, Grenada; and Dr. N. H. Bolton has been selected for appointment as a Medical Officer, Zanzibar.

DEATHS IN THE SERVICES.

Staff-Surgeon George Joseph Fogerty, late R.N., recently at Limerick. He joined the service in 1876, was surgeon of the *Carysfort* during the Egyptian War of 1882, and during the naval and military operations near Suakin in 1884 (medal and Suakin clasp and the Khedive's bronze star). He retired in 1898.

Surgeon Charles Harper, late R.N., at Bath on Feb. 16th, aged 87 years. In 1850 he was appointed surgeon to H.M.S. *Phæton*, and subsequently served on the *Hogue* and the *Impregnable*. Later he became surgeon on the *Exmouth*, the flagship of Admiral Sir Michael Seymour, and served throughout the Baltic Campaign (medal and mentioned in despatches). In 1856 he was appointed to the Royal Hospital, Stonehouse.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN the 96 English and Welsh towns with populations exceeding 50,000 persons at the last census, 8710 births and 7191 deaths were registered during the week ended Saturday, Feb. 20th. The annual rate of mortality in these towns, which had been 19·2, 20·1, and 18·9 per 1000 in the three preceding weeks, rose in the week under notice to 20·7 per 1000 of their aggregate population, estimated at 18,134,239 persons at the middle of 1914. During the first seven weeks of the current quarter the mean annual death-rate in these towns averaged 19·3, against 20·0 per 1000 in London. The annual death-rate last week ranged from 9·4 in Leyton, 9·9 in Swindon, 12·0 in Ilford, 12·2 in Acton, and 12·5 in Edmonton, to 29·4 in Merthyr Tydfil, 30·7 in Newcastle-on-Tyne, 35·6 in Southport, 37·7 in Darlington, and 39·8 in Cambridge.

The 7191 deaths from all causes were 633 in excess of the number in the previous week, and included 607 which were referred to the principal epidemic diseases, against 513 and 511 in the two preceding weeks. Of these 607 deaths, 263 resulted from measles, 135 from whooping-cough, 80 from diphtheria, 80 from infantile diarrhœal diseases, 32 from scarlet fever, and 17 from enteric fever, but not one from small-pox. The mean annual death-rate from these diseases was equal to 1·7, or 0·2 per 1000 higher than in the previous week. The deaths attributed to measles, which had been 191, 210, and 207 in the three preceding weeks, rose to 263 last week, and caused the highest annual death-rates of 2·9 in Plymouth and in Newcastle-on-Tyne, 3·4 in Northampton, 3·7 in Merthyr Tydfil, 3·8 in Tottenham, 4·4 in Gateshead, 4·7 in St. Helens, 7·0 in Darlington, and 8·1 in Cambridge. The deaths referred to whooping-cough, which had increased from 76 to 125 in the five preceding weeks, further rose to 135 last week; the highest recorded death-rates from this disease were 1·2 in Reading and in Blackburn, 1·6 in Brighton, 1·7 in Wigan, 2·0 in Carlisle, 2·1 in Gloucester, 3·7 in Merthyr Tydfil, and 5·0 in Bootle. The fatal cases of diphtheria, which had declined from 83 to 66 in the four preceding weeks, rose to 80 last week, and included 17 in London, 6 in Birmingham, 4 in Southampton, and 3 each in Portsmouth, Stoke-on-Trent, Liverpool, Bolton, Manchester, Salford, Preston, Middlesbrough, and Newcastle-on-Tyne. The deaths of infants (under 2 years) attributed to diarrhœa and enteritis, which had been 73, 68, and 70 in the three preceding weeks, further rose to 80 last week, of which 20 were registered in London, 8 in Birmingham, 6 in Liverpool, and 4 each in Wigan and Oldham. The deaths referred to scarlet fever, which had been 31, 22, and 27 in the three preceding weeks, further rose to 32 last week, and included 10 in London, 3 in Newcastle-on-Tyne, and 2 each in Ipswich, Bristol, and Preston. The fatal cases of enteric fever, which had been 12, 17, and 16 in the three preceding weeks, were 17 last week, of which 4 occurred in London and 2 in Birmingham.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had steadily declined from 5035 to 3299 in the 12 preceding weeks, had further decreased to 3165 on Saturday last; 295 new cases were admitted during the week, against 326, 365, and 368 in the three preceding weeks. These hospitals also contained on Saturday last 1616 cases of diphtheria, 231 of measles, 65 of enteric fever, 8 of whooping-cough, and 5 of small-pox. The 1802 deaths from all causes in London were 106 in excess of the number in the previous week, and corresponded to an annual death-rate of 20·8 per 1000. The deaths referred to diseases of the respiratory system, which had been 450, 497, and 455 in the three preceding weeks, rose to 459 in the week under notice, and were 214 in excess of the number recorded in the corresponding week of last year.

Of the 7191 deaths from all causes in the 96 towns 203 resulted from different forms of violence and 501 were the subject of coroners' inquests, while 1937 occurred in public institutions. The causes of 45, or 0·6 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in London and in its 14 suburban districts, in Manchester, Leeds, Bristol, Bradford, and in 52 other smaller towns. Of the 45 uncertified causes of death 7 were registered in Birmingham, 4 in Liverpool, 3 in St. Helens, and 2 each in Warrington, Bury, Huddersfield, Sheffield, Hull, Darlington, South Shields, Gateshead, and Carlisle.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns with an aggregate population estimated at 2,345,500 persons at the middle of this year, 1164 births and 1024 deaths were registered during the week ended Saturday, Feb. 20th. The annual rate of mortality in these towns, which had been 22·4, 24·1, and 23·1 per 1000 in the three preceding weeks, fell to 22·8 per 1000 in the week under notice. During the first seven weeks of the current quarter the mean annual death-rate in these towns averaged 23·1, against 19·3 per 1000 in the large English towns. Among the several towns the death-rate last week ranged from 8·9 in Paisley, 10·5 in Clydebank, and 15·1 in Motherwell, to 29·2 in Leith, 32·6 in Ayr, and 37·1 in Dundee.

The 1024 deaths from all causes were 13 fewer than the number in the previous week, and included 139 which were referred to the principal epidemic diseases, against 147 and 122 in the two preceding weeks. Of these 139 deaths, 97 resulted from whooping-cough, 13 from measles, 10 each from scarlet fever and infantile diarrhœal diseases, 8 from diphtheria, and 1 from enteric fever, but not one from small-pox. The mean annual death-rate from these diseases was equal to 3·1, against 1·7 per 1000 in the large English towns. The deaths attributed to whooping-cough, which had been 82, 86, and 81 in the three preceding weeks, rose to 97 last week, and included 50 in Glasgow, 27 in Dundee, 4 each in Edinburgh and Motherwell, and 3 each in Greenock and Kilmarnock. The deaths referred to measles, which had been 6, 13, and 11 in the three preceding weeks, were 13 last week, and comprised 6 each in Glasgow and Dundee, and 1 in Edinburgh. The fatal cases of scarlet fever, which had been 12, 17, and 8 in the three preceding weeks, rose to 10 last week, and comprised 5 in Aberdeen, 4 in Glasgow, and 1 in Falkirk. The deaths of infants (under 2 years) attributed to diarrhœa and enteritis, which had been 15, 16, and 14 in the three preceding weeks, further declined to 10 last week, and included 3 in Glasgow and 2 each in Edinburgh and Aberdeen. The deaths referred to diphtheria, which had been 10, 13, and 6 in the three preceding weeks, rose to 8 last week, of which 4 occurred in Glasgow. The fatal case of enteric fever was registered in Glasgow.

The deaths referred to diseases of the respiratory system, which had been 272, 302, and 278 in the three preceding weeks, further fell to 265 in the week under notice, but were 122 in excess of the number recorded in the corresponding week of last year; 26 deaths resulted from different forms of violence, against 36 and 35 in the two preceding weeks.

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING JANUARY, 1915.

(Specially compiled for THE LANCET.)

CITIES AND BOROUGHS.	Estimated population in the middle of 1914.	NOTIFIED CASES OF INFECTIOUS DISEASE.												DEATHS FROM PRINCIPAL INFECTIOUS DISEASES.										
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Poliomyelitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Enteric fever.	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.	Deaths from all causes.	Death-rate per 1000 living.†
LONDON	4,516,612	1	1343	731	—	50	—	39	379	26	4	2573	7·4	—	174	26	58	80	9	73	420	1·2	6792	19·6
West Districts.																								
Paddington	142,055	—	47	20	—	—	—	—	12	3	—	82	7·5	—	6	—	1	1	1	1	10	0·9	219	20·0
Kensington	170,817	—	43	12	—	—	—	2	7	—	—	64	4·9	—	2	2	2	1	—	—	7	0·5	261	19·8
Hammersmith	124,750	—	40	12	—	2	—	1	15	—	—	70	7·3	—	11	1	3	6	—	5	26	2·7	206	21·3
Fulham	158,849	—	68	14	—	3	—	6	9	1	—	101	8·3	—	4	1	3	1	1	6	16	1·3	209	17·8
Chelsea	63,791	—	10	6	—	—	—	—	5	—	—	21	4·3	—	—	—	—	—	—	—	—	—	112	21·8
City of Westminster	152,346	—	52	28	—	2	—	2	8	2	—	94	8·0	—	2	—	1	—	1	1	5	0·4	209	18·9
North Districts.																								
St. Marylebone	112,892	—	28	13	—	—	—	1	7	—	—	49	5·7	—	—	1	1	—	—	1	3	0·3	179	20·9
Hampstead	86,731	—	16	13	—	1	—	1	5	—	—	36	5·4	—	1	—	—	3	—	1	5	0·8	89	14·2
St. Pancras	212,497	—	74	46	—	2	—	2	19	1	—	144	8·8	—	5	2	6	5	—	2	20	1·2	381	23·3
Islington	324,764	—	107	34	—	2	—	1	34	3	—	181	7·3	—	8	1	5	5	—	5	24	1·0	530	20·8
Stoke Newington	50,454	—	22	13	—	—	—	1	—	—	—	36	9·3	—	1	—	—	—	—	1	2	0·5	88	21·6
Hackney	223,724	—	44	44	—	1	—	2	24	—	—	115	6·7	—	17	1	1	6	—	10	35	2·0	354	20·7
Central Districts.																								
Holborn	45,861	—	7	6	—	—	—	—	4	—	—	17	4·8	—	—	—	—	3	—	—	3	0·9	62	17·7
Finsbury	83,212	—	28	15	—	1	—	1	2	—	—	47	7·4	—	2	1	1	6	—	3	13	2·0	152	23·5
City of London	17,129	—	5	6	—	—	—	—	—	—	—	11	8·4	—	—	—	—	—	—	—	—	—	28	22·2
East Districts.																								
Shoreditch	108,869	—	20	23	—	—	—	3	20	1	—	67	8·0	—	4	—	2	—	—	6	12	1·4	174	21·5
Bethnal Green	127,662	1	48	45	—	5	—	2	16	2	—	119	12·2	—	5	1	3	4	1	5	19	1·9	196	20·8
Stepney	273,265	—	114	71	—	1	—	4	29	1	1	221	10·5	—	14	2	4	3	—	2	25	1·2	415	20·7
Poplar	160,222	—	22	14	—	2	—	—	16	2	1	57	4·6	—	8	2	1	1	1	2	15	1·2	287	23·2
South Districts.																								
Southwark	186,941	—	41	30	—	—	—	2	25	—	—	98	6·8	—	12	—	3	5	—	3	23	1·6	344	24·1
Bermondsey	124,213	—	23	22	—	1	—	—	8	—	—	54	5·7	—	12	2	2	6	—	3	25	2·6	226	23·6
Lambeth	296,724	—	92	51	—	7	—	3	13	1	2	169	7·4	—	15	1	2	4	1	7	30	1·3	448	19·3
Battersea	167,338	—	44	21	—	2	—	2	16	1	—	86	6·7	—	17	—	2	1	1	2	23	1·8	220	17·3
Wandsworth	338,998	—	80	44	—	2	—	—	24	1	—	151	5·8	—	7	2	3	7	—	—	19	0·7	407	15·8
Camberwell	262,020	—	79	39	—	1	—	3	17	1	—	140	7·0	—	14	—	4	2	—	2	22	1·1	314	15·4
Deptford	109,182	—	37	20	—	2	—	—	11	—	—	70	8·4	—	2	4	1	4	—	1	12	1·4	152	17·9
Greenwich	96,037	—	43	11	—	1	—	—	15	2	—	72	9·8	—	1	—	2	5	—	1	9	1·2	138	18·4
Lewisham	172,433	—	54	36	—	1	—	—	7	1	—	99	7·5	—	2	1	2	1	1	—	7	0·5	208	15·4
Woolwich	122,836	—	55	22	—	10	—	—	11	3	—	101	10·7	—	2	1	3	—	1	3	10	1·1	184	20·0
Port of London	—	—	—	—	—	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup.

† The death-rates are corrected for variations in sex and age constitution of the populations of the several boroughs, the population of England and Wales being taken as the standard.

HEALTH OF IRISH TOWNS.

In the 27 town districts of Ireland with an aggregate population estimated at 1,212,380 persons at the middle of this year, 639 births and 617 deaths were registered during the week ended Saturday, Feb. 20th. The annual rate of mortality in these towns, which had increased from 24·0 to 26·5 per 1000 in the four preceding weeks, was again 26·5 per 1000 in the week under notice. During the first seven weeks of the current quarter the mean annual death-rate in these towns averaged 25·5, against corresponding rates of 19·3 and 23·1 per 1000 in the English and Scotch towns respectively. The annual death-rate last week was equal to 31·5 in Dublin (against 20·8 in London and 22·3 in Glasgow), 23·3 in Belfast, 31·3 in Cork, 27·8 in Londonderry, 19·0 in Limerick, and 34·2 in Waterford, while in the 21 smaller towns the mean death-rate was 21·7 per 1000.

The 617 deaths from all causes were 2 in excess of the number in the previous week, and included 36 which were referred to the principal epidemic diseases, against numbers increasing from 32 to 44 in the three preceding weeks. Of these 36 deaths, 12 resulted from whooping-cough, 10 from infantile diarrhœal diseases, 6 from measles, 4 each from scarlet fever and diphtheria, but not one from enteric fever or from small-pox. The mean annual death-rate from these diseases was equal to 1·5, against corresponding rates of 1·7 and 3·1 per 1000 in the English and Scotch towns respectively. The deaths attributed to whooping-cough, which had increased from 9 to 17 in the four preceding weeks fell to 12 last week, and comprised 6 in Dublin and 3 each in Belfast and Cork. The deaths of infants (under 2 years) referred to diarrhœa and enteritis, which had increased from 4 to 13 in the four preceding weeks, fell to 10 last week, and included 4 each in Dublin and Belfast. The fatal cases of measles, which had been 4, 6, and 5 in the three preceding weeks, were 6 last week, of which 5 occurred in Belfast and 1 in Coleraine. The 4 deaths attributed to scarlet fever, of which 2 were registered in Waterford, were slightly below the average in the earlier weeks of the quarter. Of the 4 deaths referred to diphtheria 3 occurred in Dublin and 1 in Wexford.

The deaths referred to diseases of the respiratory system, which had increased from 137 to 182 in the four preceding weeks, fell to 168 in the week under notice. Of the 617 deaths from all causes, 191, or 31 per cent., occurred in public institutions, and 18 resulted from different forms of violence. The causes of 31, or 5·0 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest; in the English towns the proportion of uncertified causes did not exceed 0·6 per cent.

VITAL STATISTICS OF LONDON DURING JANUARY, 1915.

IN the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious diseases, it appears that the number of persons reported to be suffering from one or other of the 10 diseases specified in the table was equal to an annual rate of 7·4 per 1000 of the population, estimated at 4,516,612 persons in the middle of 1914[1]; in the three preceding months the rates were 14·0, 12·5, and 9·2 per 1000 respectively. The lowest rates last month were recorded in Kensington, Chelsea, Hampstead, Holborn, and Poplar; and the highest rates in Stoke Newington, Bethnal Green, Stepney, Greenwich, and Woolwich. The prevalence of scarlet fever showed a marked decrease from that recorded in other recent months; the greatest proportional prevalence was recorded last month in Fulham, Stoke Newington, Stepney, Greenwich, and Woolwich. The Metropolitan Asylums Hospitals contained 3609 scarlet fever patients at the end of last month, against 4561, 4956, and 4431 at the end of the three preceding months; the weekly admissions averaged 317, against 613, 661, and 445 in the three preceding months. Diphtheria showed a slight decline from the number in the preceding month; this disease was proportionally most prevalent in Stoke Newington, St. Pancras, the City of London, Shoreditch, Bethnal Green, Stepney, and Lewisham. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 1489, 1630, and 1663 at the end of the three preceding months, had declined again to 1621 at the end of last month; the weekly admissions averaged 160, against 213, 247, and 177 in the three preceding months. Enteric fever also was much less prevalent than it had been in other recent months; the greatest proportioual prevalence of this disease last month was recorded in Fulham, Bethnal Green, Lambeth, Dept ford, and Woolwich. There were 50 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of last month, against 65, 63, and 68 at the end of the three preceding months; the weekly admissions averaged 6, against 11, 8, and 10 in the three preceding months. Erysipelas was proportionally most prevalent in Hammersmith, Islington, Hackney, Shoreditch, Bethnal Green, Stepney, Southwark, and Greenwich. The 39 cases of puerperal fever notified during the month included 6 in Fulham, 4 in Stepney, and 3 each in Shoreditch, Lambeth, and Camberwell. The 26 cases of cerebro-spinal meningitis included 3 each in Paddington, Islington, and Woolwich, and 2 each in the City of Westminster, Bethnal Green, Poplar, and Greenwich; of the 4 cases of poliomyelitis 2 belonged to Lambeth and 1 each to Stepney and Poplar.

The mortality statistics in the table relate to the deaths of persons actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided; the death-rates from all causes are further corrected for variations in the sex and age constitution of the populations of the several boroughs. During the four weeks ending Jan. 30th the deaths of 6792 London residents were registered, equal to an annual rate of 19·6 per 1000; in the three preceding months the rates were 14·1, 14·6, and 16·7 per 1000 respectively. The death-rates last month ranged from 14·2 in Hampstead, 15·4 in Camberwell and in Lewisham, 15·8 in Wandsworth, and 17·3 in Battersea, to 22·2 in the City of London, 23·2 in Poplar, 23·3 in St. Pancras, 23·5 in Finsbury, 23·6 in Bermondsey, and 24·1 in Southwark.. The 6792 deaths from all causes included 174 from measles, 26 from scarlet fever, 58 from diphtheria, 80 from whooping-cough, 9 from enteric fever, and 73 from diarrhœa and enteritis among children under 2 years of age. No death from any of these diseases was recorded last month in Chelsea or in the City of London; among the other boroughs they caused the lowest rates in the City of Westminster, St. Marylebone, Kensington, Stoke Newington, and Lewisham; and the highest rates in Hammersmith, Hackney, Finsbury, Bethnal Green, Southwark, Bermondsey, and Battersea. The 174 fatal cases of measles were 32 in excess of the corrected average number, the greatest proportional mortality from this cause being recorded in Hammersmith, Hackney, Southwark, Bermondsey, and Battersea. The 26 deaths from scarlet fever were 11 above the corrected average, and included 4 in Deptford and 2 each in Kensington, St. Pancras, Stepney, Poplar, Bermondsey, and Wandsworth. The 58 fatal cases of diphtheria were 11 above the corrected average; this disease was proportionally most fatal in Hammersmith, St. Pancras, Bethnal Green, Greenwich, and Woolwich. The 80 deaths from whooping-cough were 8 below the corrected average number; the highest death-rates from this disease last month were recorded in Hammersmith, Hampstead, Holborn, Finsbury, Bermondsey, and Greenwich. The 9 fatal cases of enteric fever were 5 below the average, and belonged respectively to Paddington, Fulham, the City of Westminster, Bethnal Green, Poplar, Lambeth, Battersea, Lewisham, and Woolwich. The mortality from diarrhœa and enteritis among children under 2 years of age was proportionally greatest in Hammersmith, Fulham, Hackney, Finsbury, Shoreditch, and Bethnal Green. In conclusion, it may be stated that the aggregate mortality in London last month from the principal infectious diseases, excluding diarrhœa, was 13·4 per cent. above the average.

[1] For the middle of 1915 it is proposed to base estimates of population upon the returns of births, deaths, and migration. Until these are available the estimates for 1914 will be used in the Registrar-General's returns.

BRISTOL MEDICAL MISSIONARY SOCIETY.—The annual meeting of subscribers to this society was held last week. The medical report stated that during 1914 9636 patients had been treated, and 2263 cases had been attended at their own homes. The financial statement showed a small unfavourable balance.

DUBLIN LECTURESHIP IN OPHTHALMOLOGY.—The Board of Trinity College, Dublin, as announced in these columns last week, is about to appoint a lecturer in ophthalmology. The terms of appointment are somewhat novel. The lecturer is to engage to devote himself to the special study of some branch of ophthalmology for a period of the term of his appointment. He is to give evidence of having studied by delivering one or more lectures embodying the result of his researches to the medical men and medical students of Dublia. The annual value of the lectureship is £150, and the lecturer may be re-elected year by year to a maximum of five years. The funds for the purpose were left by the late Mr. R. J. Montgomery, a Dublin oculist.

Correspondence.

"Audi alteram partem."

URGENCY CASES HOSPITAL FOR FRANCE.

To the Editor of THE LANCET.

SIR,—We hope that you will let us put before your readers the following statement. The arrangements for the Urgency Cases Hospital are so nearly complete that the committee hope to be able to send out the hospital early in March. Its services have been accepted by the French Ministry of War, and the arrangements made have received the approval of the Anglo-French Hospitals Committee. The French military authorities have promised to provide a suitable building or buildings for 60 patients and for the staff. It will be the special work of this hospital to treat severe urgent surgical cases among the French wounded on the lines of communication between the firing line and the base hospitals. The burden already put on French army surgeons in attendance on such cases is wellnigh overwhelming, and it is likely to become not lighter but heavier. The Urgency Cases Hospital, placed some 15 miles behind the firing line, will greatly relieve the present strain on the care of the severely wounded among the French army.

The hospital staff has been appointed as follows:—Consulting surgeon: Major A. W. Mayo-Robson, C.V.O. (who has been kindly permitted by the War Office to go out with the hospital for the first month of its work). Surgeons: Dr. J. A. Cairns Forsyth and Dr. K. E. Leveson Gower Gunn. Assistant surgeons: Dr. A. S. Robinson and Dr. W. H. Ogilvie. Anæsthetist: Dr. R. W. W. Vaughan. Radiographer and electrician: Mr. J. G. Everitt. Secretary: Mr. Harry Eyres (late Consul General at Constantinople). Nursing and domestic staff:—Matron: Miss Curtis (late superintendent, Hammersmith District Nursing Association). 17 nurses, quartermaster, and 14 orderlies; superintendent of laundry and one assistant; and one cook and three assistants.

The hospital has received promises of five or six motor-cars and motor ambulances, to be driven by English chauffeurs. It will take out a complete theatre equipment, instruments, sterilisers, &c.; a complete X ray apparatus, with dynamo, which will also be used for electric lighting; beds and bedding for 60 patients; complete ward equipment; large stores of dressings, anæsthetics, and drugs; and large household stores. Generous support has been given to the hospital, but it still appeals, not only for money to maintain its work, but also for gifts of clothing, bed linen, dressings, and drugs. All donations should be sent to the honorary secretary, Mr. James Baird (cheques crossed Messrs. Cox and Co.), 50A, Curzon-street, W. All gifts in kind should be sent to 10, Stratford-place, W., marked "Urgency Cases Hospital."

We earnestly hope that many members of the medical profession in this country will help, to the best of their power, the good work of this hospital in France.

We are, Sir, yours faithfully,

LAUDER BRUNTON. E. L. C. EDEN.
W. ARBUTHNOT LANE. HERBERT POWELL.
A. W. MAYO-ROBSON. JAMES BAIRD, Hon. Secretary.
STEPHEN PAGET.

50A, Curzon-street, W., Feb. 22nd, 1915.

PREVENTION OF FROST-BITES.

To the Editor of THE LANCET.

SIR,—In the short article which appeared in THE LANCET on Feb. 6th I have stated briefly the results of some experiments which I had made with oiled silk bags. Several inquiries which I have received since that date have made me realise that the principles which had guided me had not been understood. I propose, therefore, to give shortly a fuller account of my experiments. Meanwhile, I would like to make it clear that the oiled silk was not used by me on account of its low thermo-conductivity or of its superiority to indiarubber as a waterproofing agent. My object was to use the air space between the bag and the skin as the protective agent on account of its low conductivity. The thick woollen sock or pair of socks between the skin and the bag act as a support for the bag, and the knitted wool, which is itself a bad heat conductor, holds the air in its meshes. The thin sock placed outside the bag is intended to protect the bag against injury. It is obvious that to obtain the best results the boots must not be tight or laced tightly. Any waterproof material would act in the same way as oiled silk, the object of which is to prevent the penetration of water in the air space and the soaking of the skin. The oiled silk was selected by me on account of its cheapness, of its softness and adaptability, and of the ease with which damages to it can be repaired.

This method of prevention is based upon well-known physical and pathological principles, which I did not think it necessary to discuss in a preliminary communication.

I am, Sir, yours faithfully,

SHERIDAN DELÉPINE,
Director, Public Health Laboratory.

Manchester, Feb. 23rd, 1915.

CAN EXOPHTHALMIC GOITRE BE SPREAD BY CONTACT?

To the Editor of THE LANCET.

SIR,—Exophthalmic goitre is presumably due to a toxæmia, and there is at the present time an increasing belief that this is the result of some infective condition, probably of intestinal origin. Such a view is strengthened by analogy with McCarrison's work on endemic goitre in India, for there seems little doubt that some intestinal excitant is at the bottom of this condition.[1] There is no doubt about the fact that exophthalmic goitre tends to run in families. This is generally explained as being due to a peculiar susceptibility for the disease in certain families. But is there any evidence that the disease can also be spread by contact from one person to another? My attention has lately been drawn to this latter possibility by two cases of the disease in women, both of whom had intimate friends, not relations, suffering from the same complaint.

The first, Case A, was a patient of the late Sir W. Broadbent, and she discovered she had Graves's disease through comparing her symptoms with those of a friend whom she saw constantly, and who was suffering from it in an advanced stage.

In the second, Case B, more details are available. The patient, a married woman, had a friend who developed Graves's disease in the spring of 1911. She saw this friend once a week pretty regularly for about two years, and in addition the two used to stay in the same house together for a few days

[1] THE LANCET, 1913, vol. i., pp. 147, 219, 365.

three or four times a year. She used to nurse her sometimes. In the spring of 1913 the friend moved away from the neighbourhood, and B's weekly visits stopped altogether. However, they stayed together on several occasions for some days at a time. In the spring of 1914 B herself contracted the disease.

These two cases are to some extent suggestive of the disease being spread by contact. In the case B, however, there was a very considerable interval (viz., three years) between the onset of the disease in the two women, and there is the further point—viz., that B's mother has for some years had symptoms of hypothyroidism, which subside after an occasional course of thyroid extract. Hence to this extent there is a "thyroid history" in the case.

To carry the matter further inquiries were made, through Dr. Hale White's kindness, and answers were received from ten patients who had had exophthalmic goitre. Seven of these had never come across any other cases of the disease so far as they were aware. In the three remaining cases the patients had during their lifetime come in contact with other people suffering from the disease, but in each case the length of time that elapsed between the onset of the disease and the contact was many years, so that they afford no definite evidence in favour of the theory of contacts.

At this stage it seemed the best plan to write and find out if any of your readers have come across cases of exophthalmic goitre among intimate friends, suggesting that the disease could be transmitted by contact. I should be very much obliged for any information on this point.

I am, Sir, yours faithfully,

St. Thomas's-street, S.E., Feb. 20th, 1915. E. P. POULTON.

THE ETIOLOGY OF POLIOMYELITIS.

To the Editor of THE LANCET.

SIR,—I am much indebted to Dr. George Jubb for his letter in THE LANCET of to-day's date, in which, although he is not now in a position to give the exact relative position of stables or cowsheds to the infected houses where cases of poliomyelitis occurred in West Kirby, he is able to state that the same horse and cart took round the milk. As Dr. Jubb admits, this fact in no way diminishes the possibility of stomoxys calcitrans acting as a factor in the infection of the cases which occurred. In my opinion the possibility is materially strengthened, because everyone who has had to do with horses must know how biting flies stick to their victims, annoying them even when on the trot.

That I am quite in agreement with the view that some cases of poliomyelitis acquire infection through human carriers will be adequately illustrated by the following quotations from a Brief Note on Two or Three Interesting Carrier Problems in the Epidemiology of Summer Diarrhœa, Infantile Paralysis (Poliomyelitis), and Pellagra, which appeared in *Public Health*, the journal of the Society of Medical Officers of Health, in December, 1914. In the course of this paper I say:—

> The channel of infection (of poliomyelitis) is, of course, of importance, particularly from a preventive point of view. Epidemiological evidence points strongly to the existence of human "carriers," as in a few of the Norfolk cases, and the virus has been found in the naso-pharyngeal secretions of contacts. Fortunately there appears to be a natural human insusceptibility to the disease which limits the spread of poliomyelitis by the channel of the nasal or pharyngeal mucous membrane. The maximum prevalence in summer suggests either dust-borne or fly-borne infection. Neustaedter and Thro[1] state that they have induced the disease in monkeys by inoculating them with dust from sick rooms. ..... That infection can be conveyed by stomoxys has been definitely proved by Anderson and Frost. ..... There are, then, as it seems to me, three principal methods of conveyance of infection: (1) By direct contact with a sufferer or a human carrier; (2) by an insect carrier (more suspicion attaches to stomoxys than any other insect, and there is now direct evidence of its conveying infection); (3) dust.

I then discuss the methods of prevention on the assumption that these methods of conveyance of infection are rightly designated, but having already unduly encroached on your space those interested will please refer to the original article.

I am, Sir, yours faithfully,

J. T. C. NASH,
County Medical Officer of Health.

The Shirehouse, Norwich, Feb. 20th, 1915.

FAITH AND ASTIGMATISM.

To the Editor of THE LANCET.

SIR,—Dr. S. Johnson Taylor, in THE LANCET of to-day's date, is endeavouring to confuse the issue between us. Because he has not been successful in the prescription of low cylinders he says these are of no benefit or effect. On the other hand, in my experience, certain cases have been considerably relieved by their use, hence my advocacy of them; and as my conception of a true physician is one who does all in his power to alleviate man of the ills from which he suffers, therefore, if the correction of a low degree of astigmatism cures a patient, no other treatment being employed, the inference is obvious. Except as padding, there seems to be no necessity for dragging into the discussion the Old Bailey, Harrogate, the Langham Hotel, politics, nor the Church, but Prey's letters, which I mentioned, are an exceedingly useful test for astigmatism.

On one point I am quite in agreement with Dr. Taylor—that is, in the great advantage of experience in general practice before taking up a specialty, and it was during my 10 years as a general practitioner that these cases, due to uncorrected astigmatism, first came under my notice, and a further 14 years as an oculist have convinced me that many patients derive benefit from the correction of low degrees of astigmatism, and the correction required can only be ascertained by an *accurate* examination, and finally, the glasses prescribed must be precisely fitted.

As it is evident nothing will persuade Dr. Taylor that there are two sides to every question, this will be my last contribution to the discussion.

I am, Sir, yours faithfully,

Harley-street, W., Feb. 20th, 1915. REGINALD EVERSHED.

TREATMENT OF CEREBRO-SPINAL MENINGITIS.

To the Editor of THE LANCET.

SIR,—I see from reports that there have been cases of cerebro-spinal meningitis (meningococcal) at the Crystal Palace and that eight cases have proved fatal. While house physician and assistant pathologist at the Leicester Royal Infirmary I had the opportunity of treating five such cases under Dr. T. A. Johnston of that institution.

All the cases after lumbar puncture showed the typical diplococci both in culture and staining

[1] Journal of the American Medical Association, 1913, vol. i., p. 1615.

characteristics, and I outline the method of treatment. Lumbar puncture was performed on admission with examination of a centrifuged specimen of the cerebro-spinal fluid. Within six hours the cerebro-spinal fluid was allowed to drain out till the drip was of normal rapidity, this giving about 50–70 c.c. of the fluid in all cases. 60 c.c. of blood were then drawn from the arm of a healthy relative and the blood centrifuged. About 20 c.c. of this fresh human serum were then mixed with 30 c.c. of Flexner's meningococcic serum, and this mixture injected into the spinal canal between the third and fourth lumbar spines. Five grains of soamin were injected intravenously each day in two cases. Chloroform was administered in each case and the bottom of the bed raised one foot. This procedure was repeated daily for five days, the temperature during that time showing a sharp rise with each injection, but the pulse remaining 80–90 per minute. The injections were discontinued after five days and the temperature immediately fell to normal, and oscillated between 98°–100° F. during convalescence, getting steadier each day.

In only one case was there a relapse, and another injection of the human serum with meningococcal serum was all that was necessary. Pain was acute in some cases after injection and morphia or omnopon was administered freely. One case had neuralgic pains down the legs, due to injury of the nerves of the lumbar region, but phenacetin and aspirin combined in large doses relieved this.

All the cases recovered and left hospital apparently normal, mentally and physically.

I am, Sir, yours faithfully,

NORMAN P. LAING,
Lieutenant, R.A.M.C.

Blackpool, Feb. 19th, 1915.

MILD SMALL-POX.

To the Editor of THE LANCET.

SIR,—May I supplement Sir William Osler's letter in to-day's issue of THE LANCET by recommending a study of Dr. Robert Willan's "Description and Treatment of Cutaneous Diseases," which was published in 1808, and republished with some additions in 1840 by Dr. T. Bateman; also Dr. Willan's article on small-pox, illuminated by a very beautiful coloured illustration, in the *Edinburgh Medical Journal* for 1807. The article is of value as it draws attention to the fact that though the amount of the rash influences the prognosis it does not assist in the diagnosis, and then proceeds to point out the characteristic features of the rash of small-pox by which it may be distinguished from skin diseases.

I am, Sir, yours faithfully,

GEORGE FOY.

Dublin, Feb. 20th, 1915.

IODISED PHENOL AS A DRESSING.

To the Editor of THE LANCET.

SIR,—In the treatment of burns of second degree and all forms of abrasions I should like to call your attention to the value of iodised phenol. Cut away all blisters and paint the whole surface with iodised phenol, being particular to get it well into the angle between the raised epidermis and the true skin. Then cover with sterilised plain gauze and absorbent wool. It is surprising how little pain is felt either during the dressing or afterwards. I repeat the process daily and find that in a week to 10 days the whole surface of a burn has healed without suppuration or even surrounding redness. Recently I treated a child aged 18 months in this way who had been burnt with benzine from the middle of the leg to the middle of the thigh and round three-fifths of the circumference of the limb. No lotion of any kind was used, and in spite of the dressings being soaked with urine the burn was completely healed by the tenth day. The mother of this child had both her hands burnt at the same time, and as she was obliged to go on using them I did not remove any unbroken skin at first. In her case the healing was much quicker where the skin was removed at once, but she was quite well in 14 days, and said there was very little pain.

I am, Sir, yours faithfully,

ROBERT NAIRN.

Hastings, N.Z., Jan. 7th, 1915.

THE WOUNDED ALLIES RELIEF COMMITTEE.

To the Editor of THE LANCET.

SIR,—The letter in your issue of Feb. 20th dealing with the appeal of the Wounded Allies Relief Committee, signed by Dr. James Donelan, unfortunately conveys a completely erroneous impression of our activities.

The Wounded Allies Relief Committee is not a new organisation, but was started last August, and has already earned the thanks of the British and Belgian authorities. The committee has taken over certain liabilities with regard to Anglo-French hospitals under pre-existing arrangements made with the French military authorities, but this section of its work is only a small department. The Wounded Allies appeal is for Belgium, Serbia, Montenegro, for motor ambulances, a hospital ship, motor kitchens, and other things. Hospitals for the French wounded are perhaps less than one-tenth of the committee's liabilities. The liabilities taken over by the committee are liabilities under arrangements made with the French military authorities under the ægis of a branch of the French Red Cross in France.

I am, Sir, yours faithfully,

L. HADEN GUEST.

Tavistock-square, W.C., Feb. 24th, 1915.

Obituary.

STANLEY RISELEY, M.D., C.M. EDIN.,

CONSULTING OPHTHALMIC SURGEON TO THE ROYAL HOSPITAL, SHEFFIELD.

Dr. Stanley Riseley passed peacefully away on Feb. 5th at the early age of 47, after a long and distressing illness, borne with patience and fortitude.

Stanley Riseley was a native of Bristol, the son of Mr. Henry L. Riseley, ex-sheriff of that city. He studied medicine at Edinburgh University, where he graduated as M.B., C.M. in 1891, and took the M.D. in 1893. He held various resident posts, including that of house surgeon at Halifax Infirmary and Rotherham Hospital. After serving as clinical assistant at Moorfields and ophthalmic assistant at Middlesex Hospital, he went to Sheffield in 1898 and was elected ophthalmic surgeon to the Royal Hospital. He resigned last year on account of ill-health, and was elected consulting surgeon. For several years he was secretary of the honorary staff, and represented it on the board of management. For some years also he was ophthalmic surgeon to the Rotherham Hospital and the Chesterfield and North Derbyshire

Hospital, and a medical referee for ophthalmic cases under the Workmen's Compensation Act. In 1912 he was President of the Sheffield Medico-Chirurgical Society. He was a major on the staff of the 3rd Northern General Hospital, but illness prevented his being able to undertake active duty. His contributions to medical literature were few, but displayed sound knowledge and ripe judgment. A correspondent writes: "His thorough and painstaking methods, his great kindness and sympathy, gained for him a large consulting ophthalmic practice. In earlier days he was well known, as also were his two brothers, amongst the leading tennis players in the kingdom, and later he was a moving spirit in the Hallamshire Lawn Tennis Club. His frank and straightforward manner, together with an almost boyish enjoyment of life, made his personality a very attractive one, and his untimely end will be sincerely and widely deplored."

Dr. Riseley married in 1901 the only child of the late Dr. Cleaver, of Sheffield. His widow and five children survive him. The funeral, which took place at Ecclesall Church, Sheffield, on Feb. 9th, was very largely attended.

THOMAS WESLEY MILLS, M.A., M.D. McGILL, L.R.C.P. LOND.,

EMERITUS PROFESSOR OF PHYSIOLOGY, MCGILL UNIVERSITY.

THIS well-known Canadian teacher and writer died suddenly on Feb. 13th in London of angina pectoris. Dr. Mills was born and educated in Canada. He took his B.A. at the University of Toronto and his M.B. at McGill University in 1878. He was for several years demonstrator of physiology with Professor Osler, and studied at University College with Sir John Burdon-Sanderson and Professor Schäfer. In 1884 he became lecturer in physiology and in 1886 professor of the subject at McGill. He organised the teaching of physiology on modern lines, and was the first Canadian teacher of the subject to have a thoroughly up-to-date, well-equipped laboratory. Among his early contributions to physiology were the studies on cardiac innervation. He was one of the first to follow the fruitful lead of Gaskell. He became much interested in comparative physiology, and the results of a long series of studies are embodied in a work on the nature and development of animal intelligence. In 1889 appeared his "Text-book of Animal Physiology," which was modified in the new edition in 1890 to a "Text-book of Comparative Physiology." He was passionately devoted to music, and in his younger days was himself no mean performer on the violin. In 1906 appeared his "Voice Production in Singing and Speaking," which brought him much reputation outside of medical circles. After a serious illness, he retired in 1910, and had lived in London, devoting himself with extraordinary energy and enthusiasm to the study of modern music.

UNIVERSITY OF LONDON OFFICERS TRAINING CORPS.—The commanding officer of this corps (Lieutenant-Colonel D. S. Capper) asks us to announce that a limited number of young men who are not students of the University will be enrolled for a course of continuous training with a view to qualifying for commissions. Candidates, who must be between the ages of 18 and 28 years and suitable in every respect for commissions in the army, should attend in person to see the adjutant of the contingent at headquarters, University of London, South Kensington. The next course of continuous training will commence on March 15th.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

THE week's subscriptions to the Fund are very satisfactory, mainly owing to a large anonymous donation of £300 from Dunedin and to handsome subscriptions from Sheffield and District and from the Ontario Medical Association of £250 and $1000 respectively. 'U.C.A.L." sends £82, and the British Milk Products Company a fourth contribution representing a royalty on the sale of Sanaphos. These royalties have now brought nearly £170 to the Fund.

The donation of £100 from the nurses of the Civil General Hospital at Rangoon, announced last week, consisted of part of the proceeds of a very successful entertainment given by the nurses in aid of funds arising out of the needs of the war. We are informed by the nursing superintendent that the total raised was £120, of which £20 were allotted to the fund for North Sea seamen and aviators, but the nurses desired that the larger part should be given to the Belgian Doctors' and Pharmacists' Relief Fund as an expression of their sympathy with those professions, to which the nursing profession is a sister.

IMPORTANT MEETING IN NEWCASTLE.

A meeting of medical men and pharmacists of the Newcastle and Durham districts was held at the Medical College, Newcastle-on-Tyne, on Wednesday, Feb. 17th, when Professor Rutherford Morison presided at a crowded meeting in the lecture theatre.

Professor Morison stated that all the doctors and pharmacists of the north had been invited to the meeting, the object of which was to discover means of helping the Belgian doctors and pharmacists. These could only be helped pecuniarily now. The object of the Fund they were met to support, the Belgian Doctors' and Pharmacists' Relief Fund, was to help towards their reinstatement, and it would not be long before they would get their country back.

Professor C. Jacobs, Professor of Obstetrics in the University of Brussels, then reviewed the recent experiences of his country. Their homes, villages, and towns were destroyed: they might be sorely wounded, but they were, he said, unconquerable. Notwithstanding its "Kultur," Germany had been misled, and had made a grand mistake in invading Belgium. Whatever might be the outcome of this titanic struggle, Germany would be marked eternally as criminal. Germany had been deceived by the grandeur and glitter of her military staff. In Belgium now there were no Flemish, no Walloons, no Liberals, no Conservatives, and no Socialists. They were all one in the struggle for national liberty, awaiting the day of expiation. Germany, in striking her cowardly blow, had coveted control of Belgian riches and treasures, and had feared Belgian competitors for the German trade and industry. His glorious land was as ruined as Pompeii. But the Belgians would sow new harvests, and through insistent endeavour build up a greater fortune in the future. They could never rest until their country was free and avenged, and they knew these things would come, their national flag would fly again, and their gallant King Albert reign. Their devotion to their King and Queen was complete; every boy was being christened Albert and

every girl Elizabeth. Belgium would never die. Never would Belgians part with the spirit to do till the last their duty as they had ever done it. As the spokesman of his Belgian colleagues, he appealed to the doctors and pharmacists that an impulse of international fraternity might come to the aid of Belgian doctors and pharmacists. Those who had remained in the captured towns had done so out of a sense of duty. They had suffered indescribably. Some had been taken as hostages. Twenty-seven had been shot. Widows and orphans had been left deprived of everything. He called upon the medical profession of the whole world, except Germany, to rally to Belgium's help. He had been under German control for three months. Before the Germans took from him his motor-car he had himself been able to see many atrocities, and what the Belgians said of the atrocities, he assured his audience, was not a hundredth part of what the Germans had done in Belgium. He showed on the screen photographs of the havoc wrought in Louvain, Dinant, Malines, and Charleroi.

Sir Thomas Oliver moved a resolution of sympathy with Belgium, to which country the Allies owed an incalculable debt, and of thanks to Professor Jacobs.

Dr. Turner seconded in eloquent terms, and the resolution was carried by acclamation.

Dr. Durant moved and Dr. James Smith seconded a resolution, which was carried, forming a representative committee to raise funds.

Of this committee Professor Rutherford Morison was chosen as chairman, Dr. James Don (1, Grove-street, Newcastle) and Mr. A. S. Percival, M.B. (17, Claremont-place, Newcastle), being the honorary secretaries. The committee is representative of North Northumberland generally, of Newcastle, Gateshead, Sunderland, Cleveland, Tyneside, Morpeth, Bishop Auckland, Blyth, Darlington, Consett, Durham, Hartlepool, Hexham, South Shields, and Stockton. In addition to the officers mentioned, the senior physicians and surgeons of the general hospitals in many of the cities have joined the committee, and among other names are those of Sir G. H. Philipson, Professor R. Howden, Dr. W. D. Arnison, Sir Thomas Oliver, Professor H. Hutchens, Mr. G. Grey Turner, Dr. J. W. Smith, and Professor Ranken Lyle.

THE MOVEMENT IN MANCHESTER AND DISTRICT.

An important meeting was held in the medical school at Manchester on Thursday, Feb. 18th, when Professor Jacobs delivered a stirring address to an interested meeting. Professor Archibald Donald presided.

Professor Jacobs said that Germany had erred terribly in invading Belgium, and would be branded for ever with the mark of the criminal. Belgium was once more the battlefield of Europe; the Belgians had to mourn the loss of countless dead, but they kept in their hearts an undying faith in the triumph of the Belgian cause. He pointed out that Belgian doctors and pharmacists had not been spared in the general suffering, and he appealed to the medical and pharmaceutical world that an impulse of international fraternity might come to their aid. Was it realised, he asked, what Belgium had suffered and was suffering? Duty had bound doctors and pharmacists to their posts in entirely ruined localities; some were carrying on their profession as best they could in the ruined remains of houses, and others had improvised other make-shift shelter. Some had had to work as navvies in order to have a few pence in their pockets; others had not seen bread for a fortnight, but had lived exclusively on potatoes. Others had a meagre bunch of straw laid on the bare ground for their bedding. He had seen doctors dressed in torn garments and their children in rags. One of his colleagues had to live on wayside herbs for three days and three nights, and his wife shared his fate. Some of their ranks had been taken as hostages, others had been shot, and their widows and orphans left deprived of everything. Belgium, he said, contained 4800 doctors, and at least 1000 of them were now absolutely poverty-stricken and from 2000 to 3500 were suffering cruelly through the war. They had 1800 pharmacists, and at least 300 of them were unable to earn their living, and all, with very few exceptions, were deprived of the most necessary trading stock. These practitioners had given a lesson to the world of unfaltering energy, but now their breaking courage would have to be kept up. In this emergency he called on the medical and pharmaceutical professions to rally to their help.

The following subscriptions were received at the meeting:—

First List.

	£	s.	d.
Rochdale Recruiting Doctors (per Dr. Kilroe, Dr. Kerr, Dr. Slack, Dr. Mitchell, and Dr. Wilton Mills	40	0	0
Anonymous	10	10	0
Sir William Milligan (second donation) ...	5	5	0
Dr. Alfred Brown (second donation) ...	5	5	0
Mr. Burgess (second donation)	5	5	0
Dr. Donald	5	5	0
Mr. Lindley Sewell ...	5	5	0
Dr. J. Gray Clegg... ...	5	5	0
Mr. Telford	5	5	0
Mr. P. R. Wrigley... ...	5	5	0
Mr. Thorburn	5	5	0
Mr. J. P. Buckley	5	5	0
Dr. Reynolds	5	5	0
Dr. R. R. Wild...	5	5	0
Dr. F. Rawlings	5	5	0
Dr. T. Arthur Helme ...	5	5	0
Dr. H. Clifford	5	5	0
Dr. W. K. Walls	5	5	0
Dr. W. Wardman	5	5	0
Dr. Cunliffe	5	5	0
Dr. Brockbank	5	5	0
A Friend	5	0	0
Dr. P. O. Watkin Browne	5	0	0
Dr. W. B. Anderton ...	5	0	0
Dr. C. W. Brown	3	3	0
Dr. Powell White	3	3	0
Dr. Judson Bury	3	3	0
Dr. B. Crawshaw	3	3	0
L.	3	3	0
Dr. W. Percy Stocks ...	2	2	0
Dr. E. Bosdin Leech ...	2	2	0
Dr. Arnold Jones	2	2	0
Dr. Edwin Jackson ...	2	2	0
Dr. W. E. Fothergill ...	2	2	0
Mr. Wilson Hey	2	2	0
Dr. J. Milne	2	2	0
Dr. G. E. Loveday... ...	2	2	0
Dr. W. Sankey	2	2	0
Dr. Lewis Crowe	2	2	0
Dr. E. Higson	2	2	0
Dr. W. Fletcher Shaw ...	2	2	0
Dr. J. Cryer	2	2	0
Dr. L. E. Scanlon	2	2	0
Dr. F. J. Wheeldon ...	2	2	0
Dr. Catherine Chisholm	2	2	0
Dr. Edmund Johnstone	1	1	0
Dr. J. Craig	1	1	0
Dr. R. H. Williams... ...	1	1	0
Dr. A. B. Fulton	1	1	0
Dr. A. G. Andrews... ...	1	1	0
Dr. R. G. McGowan ...	1	1	0
Dr. John Watson	1	1	0
Dr. M. J. Chevers	1	1	0
Dr. A. M. Mitchell... ...	1	1	0
Dr. W. MacGill	1	1	0
Dr. J. Healey	1	1	0
Dr. A. B. Bake	1	1	0
Dr. A. H. Buck	1	1	0
Dr. C. Wisken	1	1	0
Dr. J. Prince Stallard ...	1	1	0
Dr. J. W. Stenhouse ...	1	1	0
Dr. J. Craig	1	1	0
Dr. H. O. Harthan ...	1	1	0
Dr. J. H. Ashworth ...	1	1	0
Dr. L. Thorp	1	1	0
Dr. T. N. Orchard	1	1	0
Dr. H. H. Rayner	1	1	0
Dr. Jos. W. Roberts ...	1	1	0
Dr. J. O. Barclay	1	1	0
Dr. James Laing	1	1	0
Dr. W. Steele Smith ...	1	1	0
Dr. J. R. Carver	1	1	0
Dr. W. F. Dearden ...	1	1	0
Dr. G. K. Pitcairn ...	1	1	0
Dr. Florence Robinson	1	1	0
Dr. E. W. Floyd	1	0	0
Dr. J. W. Rensbaw ...	1	0	0
Dr. Miss E. Owen	1	0	0
Dr. B. Scott	0	10	6
Dr. Danziger	0	10	6
Dr. C. M. Stallard	0	10	6

THE WEEK'S SUBSCRIPTIONS.

The subscriptions received by Dr. Des Vœux up to Tuesday evening last, in addition to those previously acknowledged, and not including money collected by certain local funds, and the Scottish and Irish Funds, are as follows:—

	£	s.	d.
"M. R."	2	2	0
Lieut.-Colonel H. G. L. Wortabet, I.M.S. ...	3	3	0
Mr. A. R. Short	2	2	0
Mr. Arthur Edmunds ...	10	10	0
Mr. G. R. Turner	5	5	0
British Milk Products Co.	33	12	3
Dr. Rosa Bale	1	1	0
Dr. A. Veitch	1	1	0
Dr. H. E. Belcher	3	3	0
Greenwich and Deptford Division, B.M.A. (per Dr. C. G. Wallis, Hon. Sec.), first list—			
Dr. A. Lawrie	2	2	0
Dr. J. A. Mortimore	1	0	0
Dr. Thos. Berry ...	1	1	0
Dr. Beatrice F. Lovibond...	2	2	0
Dr. A. J. Russell ...	0	10	0
Dr. H. A. Vernon ...	1	1	0
Dr. J. P. Parvis ...	2	2	0
Dr. W. H. Payne ...	1	1	0
Dr. D. Clay	0	7	6

	£	s.	d.
Dr. A. Kirby	1	1	0
Dr. H. S. Knight ...	1	1	0
Dr. J. Matheson ...	1	1	0
Dr. M. McTann ...	1	1	0
Dr. J. S. Davies ...	0	2	6
Dr. C. G. Wallis ...	1	1	0
Dr. R. L. Wilcox ...	0	10	0
Dr. J. R. Frost ...	0	10	6
Dr. F. M. Turner ...	1	1	0
Dr. C. H. Hartt ...	1	0	0
Dr. C. G. Gooding...	1	1	0
Dr. A. E. Crabbe ...	0	10	6
Dr. A. Purvis	1	1	0
Dr. S. W. Thompson	1	1	0
Dr. A. T. Drake ...	1	1	0
Dr. C. Parke	1	1	0
Dr. V. Gideon	2	2	0
Dr. M. F. Tressider..	1	1	0
Dr. J. Mackern ...	2	2	0
Dr. D. F. Burney ...	1	1	0
Dr. C. H. Fernie ...	1	11	6
Dr. J. B. Saundry ...	0	10	0
Dr. F. E. Wilson ...	1	1	0
Dr. A. Fothergill ...	1	1	0
Dr. W. D. Wiggins..	1	1	0
Dr. G. B. Goodall ...	0	5	0
Dr. R. S. Barker ...	0	10	6
Dr. W. H. Reed ...	1	1	0
Dr. S. D. Bhabha ...	1	1	0
Dr. R. B. Scholefield	1	1	0
Dr. G. Nelson	1	1	0
Dr. W. Scott	1	1	0
Dr. W. S. Carpenter	0	10	6
Dr. R. J. Black ...	1	1	0
Dr. E. Spencer Evans ...	1	0	0
"Lieutenant P. E. Adams, R.A.M.C.	2	2	0
Ontario Medical Association (per Dr. J. Gibb Wishart), second donation	205	11	11
Mid-Staff Division, B.M.A. (per Dr. T. D. Stuart Shaw, Hon. Sec.)—			
Dr. T. M. Rowland	0	10	0
Dr. T. N. Cookson...	0	10	0
Dr. L. Gray	0	10	0
Dr. W. M. Clendinnen	1	1	0
Dr. A. E. Hodder ...	0	10	0
Dr. H. M. Morgan...	1	0	0
Dr. J. K. Butter ...	0	10	0
Dr. C. J. Armson ...	0	10	0
Dr. F. Armson ...	0	10	0
Dr. Bull	0	10	0
Dr. W. H. Horton ...	1	1	0
Dr. Stirling Christie	2	2	0
Dr. L. S. Tomkys ...	1	1	0
Drs. W. G. Lowe and Bradbury	1	1	0
Dr. R. Freer	1	1	0
Dr. J. Priestley ...	2	0	0
Dr. R. Holton	1	1	0
Dr. Thos. Dixon ...	1	1	0
Dr. Bradford	0	10	6
Dr. Wm. Reid	1	1	0
Dr. H. W. Gosse ...	1	1	0
Dr. J. E. MacKenie	1	1	0
Dr. A. H. Shaw ...	1	1	1
Drs. Salt and Lowe	1	1	0
Dr. T. D. Stuart Shaw	1	1	0
South-Eastern Counties (Scotland) Division, Edinburgh Branch, B.M.A. (per Dr. M. J. Oliver, Hon Sec.)—			
Collected by Dr. J. J. McMillan—			
Dr. J. C. Johnstone	0	10	0
Dr. Critchlow ...	1	1	0
Dr. McMillan ...	1	1	0
Collected by Dr. A. J. Campbell—			
Dr. McWatt	1	1	0
Dr. McVie	1	0	0
Dr. J. McWhir ...	0	5	0
Collected by Dr. P. J. Henderson—			
Dr. Doig	2	2	0
Dr. Henderson ...	2	2	0
Dr. Muir	2	2	0
Dr. Somerville ...	2	2	0
Dr. Menzies	1	1	0
Dr. Stevenson ...	1	1	0
Dr. Tyrrell	1	1	0
Dr. Wilson	1	1	0
Collected by Dr. Davidson—			
Dr. Fleming... ...	1	1	0
Dr. Lauder	1	1	0
Dr. Davidson ...	1	6	6
Mr. and Mrs. R. V. Mather	1	0	0
Mrs. Scott	1	0	0
Miss Michie	0	10	0
Mr. W. M. Alexander	0	10	0
Mr. John Maxwell	0	10	0
Mr. A. Gilchrist...	0	10	0
Dr. Jeffrey	0	10	6
Dr. Hamilton-Hume	0	10	6
Rev. J. Cowan ...	0	5	0
Mrs. Charters ...	0	5	0
Mr. J. B. Nichol ...	0	5	0
Mrs. MacArthur...	0	5	0
Dr. G. Henderson	0	18	6
Collected by Dr. Young—			
Dr. Marr	1	1	0
Dr. Rogerson ...	0	5	0
Dr. Young	1	1	6
Contributions sent to Hon. Sec.—			
Dr. P. C. McClagan	1	1	0
Dr. Oliver	0	10	6
Dr. Bernard B. Gough...	1	1	0
Dr. John Matthews ...	5	5	0
Mr. F. A. Juler	2	2	0
Dr. Agnes Henderson ...	5	5	0
City Division, B. M. A. (per Dr. C. F. Hadfield, Hon. Treas.), further list—			
Dr. E. L. Taylor ...	1	1	0
Dr. T. M. Martin ...	1	1	0
South Staff Division, B. M. A. (per Dr. H. C. Mactier, Hon. Sec.), third list—			
Dr. A. H. Carter ...	1	1	0
Mr. J. A. Wolverson	0	10	6
"M.D., M.R.C.P.Lond."	1	1	0
Dr. W. G. Savage	1	1	0
Dr. H. Comer Renshaw.	5	5	0
Dr. E. A. Edelsten ...	1	1	0
"U. C. A. L." per Mr. Harold Miller	32	0	0
Mr. W. A. H. Naylor ...	1	1	0
Mr. J. C. Wiggin	1	1	0
Mr. J. A. Cope...	0	10	6
Mr. J. T. Mountain ...	0	10	6
Mr. and Mrs. Herbert Antcliffe, result of Whist Drive	5	0	0
Mr. J. L. Murgatroyd ...	0	5	0
Mr. W. White	0	5	0
Mr. J. O. Thomas	0	5	0
Hampshire Pharmacists' Association, collected by (per Mr. F. E. Bilson)—			
Hampshire Association	2	2	0
Mr. A. McConachie	0	5	0
Mr. W. Andrews ...	0	1	6
Mr. F. A. Monk ...	0	10	6
Mr. W. E. Kirkman	0	5	0
Mr. S. G. Bartlett ...	0	5	0
Mr. C. H. Baker ...	1	1	0
Mr. C. Polgreen ...	0	5	0
Mr. W. I. Gradidge	0	5	0
Mr. F. Oram	0	5	0
Mr. Harry Wilson ...	0	10	6
Mr. A. H. Owen ...	0	5	0
Mr. B. C. Jukes ...	0	5	0
Mr. G. H. Gare ...	1	1	0
Mr. W. J. Dodridge	0	5	0
Mr. F. Wainwright	0	5	0
Mr. A. E. Chaston ...	0	10	0
Birmingham Local Committee (per Dr. R. Saundby, Hon. Sec.), eighth donation—			
Dr. and Mrs. Cyril R. Lunn (proceeds from an "At Home" organised by Mrs. Lunn	12	12	0
Dr. Cordley Bradford	1	1	0
Dr. Douglas W. Eshelby	1	1	0
Dr. J. A. Brown ...	1	1	0
Dr. Beatson Hird ...	1	1	0
Dr. H. R. Forrest-Hay (additional)	0	10	0
Sheffield and District (per Dr. A. E. Naish, Hon. Treas. Sheffield Fund for Belgian Doctors and Pharmacists)...	250	0	0
Dr. A. Graham Bryce ...	1	1	0
Dr. C. C. Harris	0	10	0
Dr. H. Faithful Smith	2	2	0
Norwich Division, B.M.A. (per Dr. G. P. C. Claridge, Hon. Sec.)—			
Dr. Barton	1	1	0
Mr. A. J. Blaxland	1	1	0
Dr. Burton-Fanning	2	2	0
Dr. Chalmers... ...	5	5	0
Dr. Claridge	1	1	0
Mr. A. Crook	2	2	0
Dr. Darrell	5	0	0
Dr. Greene	3	3	0
Mr. H. C. Nance ...	2	2	0
Dr. Starling	2	2	0
Dr. H. E. Taylor ...	1	1	0
Tower Hamlets Division, B.M.A. (per Dr. W. H. F. Oxley, Hon. Sec.), second list—	£	s.	d.
Dr. G. P. Tooker ...	1	1	0
Dr. W. G. Gillespie..	1	1	0
Dr. M. Bernstein ...	1	11	6
Dr. W. M. Feldman	0	10	6
Dr. G. Michael	1	1	0
Dr. E. B. Hastings...	1	1	0
Anonymous from Dunedin (per Bank of New Zealand)	300	0	0

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham-gate, London, S.W., and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Ltd. £6900 had passed into the Treasurer's hands by Tuesday last, the sum not including the Scottish and Irish and several large local funds.

THE APPEAL FOR SURGICAL INSTRUMENTS.

The Master of the Society of Apothecaries acknowledges with thanks the receipt of surgical instruments from the following donors:—

Dr. A. Hill Joseph, Bexhill-on-Sea; Dr. W. T. Handley, New Cavendish-street, W.; Dr. Mary C. Bell, Harley-street, W.; Dr. G. H. Colt, Aberdeen; Dr. Leishman, Slough; and Dr. Purslow, Birmingham.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates passed in the subjects indicated:—

Surgery.—J. E. Cheesman (Sections I. and II.), St. Mary's Hospital; A. E. Gravelle (Sections I. and II.), King's College Hospital; I. F. Mackenzie (Sections I. and II.), Guy's Hospital; A. G. Williams (Sections I. and II.), Cambridge and St. Bartholomew's Hospital; and A. H. Willson (Sections I. and II.), London Hospital.

Medicine.—M. M. Burt (Sections I. and II.), Birmingham; J. R. Crollius (Sections I. and II.), Edinburgh and London; C. S. Dodson (Sections I. and II.), Cambridge; A. Glen (Sections I. and II.), Sheffield; I. F. Mackenzie (Sections I. and II.), Guy's Hospital; E. M. Townsend (Sections I. and II.), Middlesex Hospital; and A. G. Williams (Sections I. and II.), St. Bartholomew's Hospital.

Forensic Medicine.—M. M. Burt, Birmingham; F. W. Chamberlain, Middlesex Hospital; J. R. Crollius, Edinburgh and London; H. A. De Morgan, Middlesex Hospital; L. A. J. Graham and I. F. Mackenzie, Guy's Hospital; D. C. Ogilvie, Middlesex Hospital; A. L. Robinson, University College Hospital; A. G. Williams, St. Bartholomew's Hospital; and A. H. Willson, London Hospital.

Midwifery.—R. H. Chadwick, Leeds; J. R. Crollius, Edinburgh and London; J. D. Ferguson, Leeds; L. A. J. Graham, Guy's Hospital; L. Kahan, London Hospital; I. F. Mackenzie, Guy's Hospital; W. H. Rhys Jones, Charing Cross Hospital; A. G. Williams, St. Bartholomew's Hospital; and G. C. Wright, London Hospital.

The Diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery: M. M. Burt, A. H. Gravelle, I. F. Mackenzie, E. M. Townsend, and A. H. Willson.

UNIVERSITY OF OXFORD.—Dr. Alexander Hill Griffith has been nominated to act as an examiner for the 1915 and 1916 examinations for the Diploma in Ophthalmology.

MENTAL AFTER-CARE ASSOCIATION.—The annual meeting of the Mental After-Care Association for Poor Persons Convalescent or Recovered from Institutions for the Insane will be held at Bethlem Royal Hospital, St. George's-road, S.E. (by permission of the governors of the hospital), on Tuesday, March 2nd, at 3 P.M. The chair will be taken by Dr. Henry Rayner, chairman of the association.

ASSOCIATION FOR PROMOTING THE TRAINING AND SUPPLY OF MIDWIVES.—The eleventh annual meeting will be held, by permission of Miss Lorent Grant, at 75, Barkston-gardens, London, S.W., on Thursday, March 11th, at 3 P.M., when the chair will be taken by Mrs. Humphry Ward. A short address on the Present Position of the Midwife will be delivered by Miss S. M. Glass.

THE Royal Dental Hospital, Leicester square, has received a donation of £100 from the Worshipful Company of Grocers. The annual general meeting of the governors will be held on Thursday, March 11th, at 5.30 P.M., the Hon. Harry Lawson presiding.

UNDER the will of the late Miss Marjory S. Schaw, of Glasgow, a sum of £500,000 will be divided among charitable institutions at the discretion of the trustees.

The War.

THE HONOURS LIST.

FOLLOWING Sir John French's despatch dated Jan. 14th, and the list of names brought forward by the Commander-in-Chief for gallant and distinguished service in the field, the King has approved of a long list of rewards "for services rendered in connexion with Operations in the Field." The following are the medical officers promoted or appointed to orders:—

Staff.

Colonels (temporary Surgeon-Generals) R. Porter and J. J. O'Donnell, D.S.O., promoted Surgeon-Generals. Major (temporary Lieutenant-Colonel) H. Ensor, D.S.O., promoted Brevet Lieutenant-Colonel.

Surgeon-General Sir Arthur T. Sloggett, C.B., C.M.G., K.H.S., promoted K.C.B.; Surgeon-General T. P. Woodhouse, Colonel M. W. O'Keefe, Colonel E. H. L. Lynden-Bell, and Colonel S. Hickson, K.H.S., appointed C.B.'s.

Colonel R. H. S. Sawyer and Colonel F. H. Treherne appointed C.M.G.'s.

Captain E. L. Moss awarded the Military Cross.

Royal Army Medical Corps and Medical Services.

Bt. Cols.—Lieut.-Cols. A. J. Luther and C. B. Lawson.

Bt. Lieut.-Cols.—Majs. A. W. Hooper, D.S.O., E. W. Bliss, and M. H. G. Fell.

K.C.M.G.—Lieut.-Cols. (tempy. Cols.) G. H. Makins, C.B., and Sir A. A. Bowlby, C.M.G.

C.B.—Surg.-Gen. W. G. Macpherson, C.M.G., K.H.P., Col. F. W. C. Jones, Bt. Col. Sir W. B. Leishman, K.H.P., F.R.S., and Col. (tempy.) Sir J. Rose Bradford, K.C.M.G., F.R.S.

C.M.G.—Lieut.-Cols. G. H. Barefoot (tempy. Col.), C. H. Burtchaell, L. T. M. Nash, B. Forde, and G. S. McLoughlin, D.S.O.; Majs. G. T. K. Maurice and E. T. F. Birrell.

D.S.O.—Majs. H. R. Bateman, C. R. Evans, C. M. Goodbody, L. W. Harrison, H. L. W. Norrington, F. A. Stephens, F. A. Symons, V. J. Crawford, A. C. Fox, G. J. A. Ormsby, and N. J. C. Rutherford; Capts. A. G. Wilson, S. J. A. H. Walshe, and E. T. Potts.

Military Cross.—Capts. C. Kelly, E. C. Phelan, W. B. Purdon, W. F. M. Loughnan, T. H. Scott, Tempy. Lieut. J. R. Waddy, Lieuts. W. Tyrrell, W. McK. H. McCullagh, Tempy. Lieut. W. W. Ingram, Lieuts. J. FitzG. Gwynne, F. C. Davidson, Tempy. Lieut. E. W. Carrington, Lieut. T. H. Balfour, Sgt.-Majs. W. H. Storey, R. J. Fleming, A. Baker, A. Bennett, J. J. Earp, and H. J. Reeve.

Hon. Capt.—Qrmr. and Hon. Lieut. E. J. Buckley.

Indian Army.

Bt. Col.—Lieut.-Col. A. H. Moorhead, I.M.S.

Bt. Lieut.-Col.—Maj. J. M. Sloan, D.S.O.

Military Cross.—3rd Class Asst. Surg. F. B. A. Braganza.

LIEUTENANT ARTHUR MARTIN LEAKE, V.C. (CLASP).

In the *London Gazette* of last week, among the awards of the Victoria Cross to officers and men for conspicuous acts of bravery and devotion to duty whilst serving with the Expeditionary Force, appeared this announcement:—

Lieutenant Arthur Martin Leake, R.A.M.C., who was awarded the Victoria Cross on May 13th, 1902, is granted a clasp for conspicuous bravery in the present campaign.

The following is the description of the act of gallantry which earned Surgeon-Captain Martin Leake, as he then was, the Victoria Cross in the South African War: "While tending the wounded under heavy fire from 40 Boers at 110 yards range at Vlakfontein he was shot three times, but although grievously hurt he refused water to relieve his own thirst until all the others (eight) had had some." The extremely rare distinction of a clasp to the Victoria Cross has now been awarded to him on the following ground:—

For most conspicuous bravery and devotion to duty throughout the campaign, especially during the period Oct. 29th to Nov. 8th, 1914, near Zonnebeke, in rescuing whilst exposed to constant fire a large number of the wounded who were lying close to the enemy's trenches.

Lieutenant Martin Leake was educated at University College Hospital, and at the time of the South African War went to South Africa in 1900 with the Hertfordshire Yeomanry. On the return of that regiment he remained to join Baden Powell's Police. In September last he rejoined the army with the temporary rank of Lieutenant in the Royal Army Medical Corps. The whole medical profession unites in honouring him.

THE CASUALTY LIST.

The casualties among officers in the Expeditionary Force reported since our last issue include the name of Lieutenant Donald Campbell, R.A.M.C., who obtained a temporary commission in December last. Captain J. A. T. Bell, of the New Zealand Medical Corps, is also reported killed. In the recent serious rioting at Singapore Lieutenant A. F. Legge, Singapore Volunteer Medical Company, Dr. P. N. Gerrard, of the Federated Malay States Medical Service, and Dr. E. D. Whittle were killed. Lieutenant L. Courtauld, R.A.M.C., is reported wounded.

On board H.M.S. *Clan McNaughton*, which has been reported a total loss, were Staff-Surgeon W. Graham Moore-Anderson, R.N., and Surgeon-Probationer R. O'C. Redmond, R.N.V.R.

THE BRITISH SCIENCE GUILD ON ANTITYPHOID INOCULATION.

The British Science Guild, whose executive committee contains names illustrious in nearly every branch of science, has recently published a resolution of its medical committee condemning the publication by lay journals of advertisements by the British Union for Abolition of Vivisection attempting to dissuade soldiers undergoing antityphoid inoculation. One notoriously discreditable advertisement, subsequently disowned by the journal that published it, is referred to, and particularly the following sentence is condemned as untrue: "Inoculation (proved to be an utterly useless and dangerous practice) is forced upon intelligent objectors, even as the Germans would force their 'Kultur' upon unwilling Europe." The committee has not seen a single scientific treatise of any value which has succeeded in proving the inoculation to be "an utterly useless and dangerous practice, and does not believe that such a scientific treatise has ever been even attempted." The committee then quotes the names of the officers of the union: Dr. Walter Hadwen, Viscount Harberton, Lord Tenterden, Mr. H. G. Chancellor, M.P., and Miss Beatrice E. Kidd, and states that it does not think that these persons have ever made such researches into typhoid inoculation, or indeed into pathological and sanitary problems in general, as to justify them in posing as arbiters on a question of this nature, which requires the most expert and impartial consideration. Then protesting against the publication by lay papers of any such one-sided statements by unscientific societies, the committee exposes the situation tersely:—

No scientific theorem is accepted nowadays by scientific men without the consideration of a vast amount of evidence,

generally contained in innumerable scientific publications, the presentment of which even in abstract would fill whole numbers of any daily or weekly periodical. On the other hand, any ignorant or unreasonable person can express in a single sentence his disbelief of this evidence, and thus attempt to dissuade the public from availing themselves of the advantages which science has conferred. Those who are seeking to benefit humanity by medical research are therefore always placed at a disadvantage in public discussions of this kind, because they cannot give a full statement of their arguments, except in a lengthy scientific form, whereas antiscientists can always pretend in a few words that such evidence has been refuted.

The committee appeals to the editors of British periodicals to set their face against the publication in the future of such advertisements, and endorses the satisfaction expressed by the military and medical authorities with the results of the antityphoid inoculation of our troops in the present campaign. The protest is convincingly expressed, and renders a service to truth not only as regards medicine and science, but as regards every technical subject of discussion in which the judicial weight of evidence is countered by an easy and irresponsible denial.

THE EPSOM AND EWELL WAR HOSPITAL.

Much discussion has been taking place in the daily press and questions have been asked in Parliament in regard to the call made upon the committee of the Epsom and Ewell War Hospital to vacate the premises for the racing season, which, although spread over three months, actually occupies only six days—viz., two days in April for the Great Metropolitan and the City and Suburban, and four days in June for the Derby and the Oaks.

The facts appear to be as follows. Soon after the beginning of the war the Grand Stand Association of Epsom Racecourse generously offered the use of the new annexe to their Grand Stand, which was completed and furnished only a few months before the war for a restaurant during race meetings, and which has never been used, to a committee of doctors and residents of Epsom for use as a hospital for sick and wounded soldiers from the front and for such troops as might be quartered in the neighbourhood. The stipulation was, however, made that at the end of six months—viz., on March 6th—the annexe should be restored to its owners to be prepared for use during the racing season as a restaurant and to provide sleeping accommodation for the large retinue of waiters and others employed during the meeting. The hospital committee accepted the use of the building on these terms and proceeded to equip it adequately at a cost of several thousand pounds and convert it into a well-staffed military hospital of 100 beds, in which capacity it has done admittedly excellent work ever since, caring for a large number of our own wounded from the front, including a few Belgian soldiers, and for the troops billeted or encamped in the neighbourhood. The discussion arose over the fact that the Grand Stand Association called on the hospital committee in accordance with the stipulation to hand over the building from the date agreed on, March 6th, that it might be put in order for its original purpose. This course would naturally entail expense, and to some extent danger, through the removal of the 75 patients in hospital; also there would be difficulty in finding other adequate accommodation in the neighbourhood, and this at a time when the war hospital accommodation generally needs increasing to a considerable extent. Even locally negotiations are going on to take over one of the asylums so as to provide an additional 2000 or 3000 beds. On behalf of the Association it was claimed that a bargain is a bargain; that the hospital has had the valuable use of the building, together with beds, blankets, and kitchen equipment free for six months, and that it could have them again when the racing season ends early in June; and that the Association has already incurred the cost necessarily attendant on wear and tear, so that it was considered somewhat unreasonable that it should be asked in addition not only to forego the possibility offered by its short season to recoup itself to some extent for all the expenses of the idle season, of which the hospital has had all the benefit, but to add to its expenses by providing sleeping accommodation for its staff. The contention of the secretary, Mr. Henry Dorling, is that if the hospital occupation should continue without a break the Government might commandeer the building and pay compensation for the loss of its use. On the other side the hospital committee have recognised, like Mr. Dorling, that a bargain is a bargain, and made the following points: The Association has got along from the beginning until this year without the restaurant building, and in view of the altogether unprecedented and serious state of national affairs it might continue to do so this year. The hospital was equipped and is supported by the liberal contributions of Epsom people, and the work of the medical staff and much of the lay work are voluntary, while if the hospital has to be removed for three months the expense of removal and return will fall on the subscribers, while such removal would hardly be free from at least serious inconvenience to some of the patients. Save for a small cottage hospital in Epsom, only just sufficient for local needs, there is no other provision for several miles round for civil needs and none at all for military cases, while hospital accommodation is constantly needed for the 5000 recruits stationed in and around Epsom. Moreover, the exceptional suitability in all respects of the building to its present purpose, its convenience in the matter of locality, and its unexampled salubrity all render it impossible of replacement. On all these counts the feeling in Epsom itself, including even the greater part of the sporting element, which is quite powerful there, is strong that the exceptional situation imperatively demanded whatever sacrifice on behalf of King and country might be requisite at this crisis. This feeling was well expressed by the Duke of Portland, who in a letter to the *Times* of Feb. 19th said that when this country was coping with a Herculean task more formidable than any with which she had tried conclusions in the course of her history, it was nothing less than the duty of all men, racing men included, to subordinate their own to the common interest. It is with real satisfaction that we now learn that arrangements satisfactory to all parties have been made as a result of a conference between the Grand Stand Association, the hospital authorities, and the War Office. The hospital authorities are to continue in occupation of the building, but during race weeks one storey, that which is connected with the grand stand by a bridge, will be placed at the disposal of the Grand Stand Association, special arrangements being made during the race meetings for the feeding of the patients.

HÔPITAL ANGLO-FRANÇAIS.—Mr. H. W. Carson sends us the following account of the work of this institution:—The Hôpital Anglo-Français at Le Tréport, Seine Inférieure, which has accommodation for 65 patients, was founded by the Hon. Lady Murray, under the British and French Red Cross, for the reception of wounded French soldiers. It occupies a newly built hotel, which has not as yet been open to visitors, standing in its own grounds of some three acres on the high cliffs south-west of Le Tréport, overlooking the sea. The sanitary arrangements are excellent, practically every room having hot and cold water fitted, and there are many bathrooms. The medical and nursing staff is English, and includes a surgeon, two dressers, three sisters, and three probationers. In addition there is a staff of seven *infirmiers*, French male nurses attached to the army, who do not, however, take any part in the actual nursing. By kind permission of Colonel Clark, R.A.M.C., who is in charge of a 500-bed army hospital on the same estate, the X ray and pathological work is undertaken by members of the Royal Army Medical Corps staff, and this assistance has proved invaluable.

The hospital received its first cases on Dec. 12th when 50 arrived, and since then the average number of beds occupied has varied between 45 and 55. Patients come direct from the front *viâ* ——, and in some cases have arrived within 24 hours of their receipt of injury. But the time varies very much and averages perhaps nearer three days. The last part of the journey ——, about 28 miles, is done by motor ambulance, a rather trying journey, as at this time of year the roads in Northern France are not at their best. It may interest readers of THE LANCET to hear some details of cases under treatment. At first a number of perforating wounds of the hand were received, and this is perhaps the commonest form of wound. A rifle bullet wound is a rarity, the great majority being due to shell or bomb, nearly all presenting multiple injuries. Shrapnel wounds are not common. Wounds by bomb explosion, apparently large bombs thrown by howitzers, are sometimes very severe, affecting the limbs chiefly; but, of course, it is probable that abdominal and thoracic wounds from this cause are too severe to be sent to us as we are 50 miles from the front. Wounds of bone are in nearly all cases very severe, the bone being splintered into many fragments at the point of impact. If the femur is fractured it is our experience that a large extravasation of blood occurs, and as this soon becomes septic an abscess forms, often extending widely in the thigh. So far we have seen only two cases where a hole has been drilled through a bone without causing solution of continuity, both rifle bullet wounds, one of the tibia and the other of the ulna. Injuries to nerves have been rare, a division of the ulna nerve in the forearm by a rifle bullet, and the involvement of the musculo-spiral nerve in a severe fracture of the humerus being the only cases noted of late. The following cases have presented some unusual features of interest:—

Shell wound of thigh.—The upper and inner aspect of the right thigh was lacerated by shell fire, causing a wound 10 inches by 12 inches. There was no injury to the femur or to the femoral artery, and the wound is healing satisfactorily.

Bullet wound of temple with destruction of both eyes.—The bullet entered 1 inch behind the outer canthus of the right eye, passed through the right orbit, upper part of the nose, and left orbit, destroying the globes of both eyes. There were no complications, and the patient is doing well.

Fracture of left femur with injury to knee-joint.—Shell wound, fracturing the femur 6 inches above knee-joint and opening the knee-joint by destroying the patella, only a few fragments of which were found. Amputation was necessary above the seat of fracture of the femur.

Abdominal wound.—Patient reached hospital six days after receipt of the injury. Shell wound. A hole 3 inches in diameter just above the symphysis pubis led downwards and to the right, laying bare the right side of the interior of the bony pelvis, fracturing the right os pubis and ischium. The portion of shell had been removed through the right buttock before admission. No injury to bladder or intestines. The wound was very septic, and on the tenth day from the receipt of injury secondary hæmorrhage occurred resulting in death. At no time was there any indication of peritonitis or injury to a hollow viscus. In addition there was a compound comminuted fracture of the right tibia.

Fracture of fibula.—Bullet wound. In this case an aneurysmal varix of the peroneal vessels occurred with effusion of blood into the tissues of the calf of the leg. Mr. W. E. Hills, who was "médecin chef" at the time, was obliged to tie the popliteal artery, and the operation was entirely successful.

These are but a few chosen from a number of severe injuries which this hospital has treated during the two months of its existence. The most noticeable feature is that every case without exception is septic on arrival. Aseptic surgery is not even thought of, and even the most rigid antiseptic treatment appears at first unavailing. Peroxide of hydrogen seems to give the best results, and this and izal are our sheet-anchors and fomentations are the invariable dressing. We have so far had no tetanus cases. Most have had a prophylactic injection of antitetanic serum before arrival, and where this has not been done an injection is given here if the injury is not more than 48 hours old. Perforating wounds of the hand heal very quickly as a rule in spite of the fact that most of them have comminuted fractures of one or more metacarpal bones. The method of healing is practically the same in all—namely, rapid healing of the palmar wound and a more gradual closing of the dorsal, which is delayed by the escape of small pieces of bone. In dealing with fractures of the long bones an effort is made to save all the fragments, but the septic condition prevents plating or wiring operations. A great difficulty is experienced in finding a splint which will keep the fractured ends at rest during the dressings, but in spite of this fractures unite without any marked deformity. We receive patients from all parts of France and French North Africa, and the varieties of patois for those of us who are not linguists make a ready excuse for any difficulty in understanding. We have now under our care, ——, who speaks excellent English, but one might well say, in the wards at any rate, "no English spoken here," for the French Tommy is essentially a unilinguist. One carries away a very pleasant impression of the French soldier. He is brave, modest, an excellent patient, and when convalescent full of fun. Their kindness to one another is delightful to witness and their gratitude to their hosts most touching.

THE AMBULANCE DEPARTMENT OF THE ORDER OF ST. JOHN IN INDIA.—The ambulance department of the Order of St. John started work in India as far back as 1888, but it was not until 1900 that any definite attempt was made to establish the Order in that country. Between 1905 and 1908 the work of the association languished, but in 1909 Lord and Lady Minto took up the matter with great enthusiasm, and since that year the progress has been remarkable. In 1908 the total funds in hand were only £20 sterling and now the Indian branch has an ordinary fund of half a lakh of rupees (£4000) and a special Red Cross Fund with a present cash balance of over £10,000 sterling. In 1908 there were only two centres of the association, now there are 300 working actively. On August 7th last, 48 hours after the news of the outbreak of the war reached India, the Indian Council issued a circular letter to its 300 centres, which had been established in all parts of the Indian Empire, asking them to form ladies' committees for the purpose of collecting funds and gifts in kind and material for ambulance detachments should these be formed. A few days later a depôt for the reception and distribution of these gifts was established at Bombay in extensive premises in one of the best parts of the city.

A special feature of the work of the branch has been to avoid an accumulation of articles of one kind which has occurred in Red Cross work in previous wars, and with this view the medical branch of the army headquarters in India worked out what is called a Unit of Red Cross Gifts, which included the number of articles of various kinds likely to be required for each ten hospital beds. The whole of the collection of gifts in India has been worked on this principle. The number of units despatched to the front has been over 2000, representing a cash value of £40,000. In addition to the despatch of gifts the association has provided a large number of wheeled litters and four motor ambulances for the conveyance of the wounded from the ambulance trains to the special war hospitals for Indian troops which have been established in 12 of the large military cantonments. The Indian Council has remitted £1000 to the Indian Soldiers' Fund and has endowed five beds in the special war hospital which is being organised by the Order of St. John

in London. It has forwarded considerable sums to the French, Russian, Belgian, and Japanese Red Cross societies and has also given cash grants to the senior nursing sisters of Queen Alexandra's Indian Military Nursing Service proceeding with hospitals from India, and has supplied special consignments for some of these ladies. Its centres have also furnished at short notice trained nurses required for special hospitals. The St. John Ambulance Brigade, which is now firmly established in India, has also been very active, and the whole of the work of removing wounded arriving in hospital ships at Bombay has been entrusted to the Bombay corps of the brigade.

"FROZEN FEET" IN THE FRENCH ARMY.—Our Paris correspondent writes: "Dr. Temoin on Feb. 2nd read before the Académie de Médecine a communication based on a large number of observations by himself and other surgeons in which he points out that there is a class of these cases of so-called 'frozen' feet in which cold is far the least important factor. These 'frost-bites,' attacking often many toes, and resulting in their complete dropping off by gangrene, have been observed in conditions where the temperature has never fallen to freezing point. These false 'frost-bites' have all the appearance of true ones—anæsthesia, redness, the production of phlyctenulæ and gangrene. Their pathological mechanism also is the same; they are troubles of local nutrition. Only here these troubles are produced, not by the action of cold, but through the constriction of the feet by the footgear, aided by the slowing of the circulation in the leg, the consequence of the bandages that the French soldiers often use as puttees. The damp aggravates the condition, inducing maceration of the tissues and causing shrinking of the bandages. These eschars and gangrenes are the result of the combined action of inadequately watertight boots too tightly laced and the wearing of too tight bandages. The Russian and German troops, using waterproof and sufficiently loose footgear, and fighting under the same conditions as the French soldiers, have controlled these serious epidemics of 'frozen feet.' Prevention consists in the suppression of leg bandages, the loosening of laces, and the use of fatty substances encasing the entire surface of the foot and leg—oiled paper or greased socks—during the stay of the soldier in the wet trenches. If the frosts come again there will be no more of these so-called frost-bites. Dr. Temoin cites the case of a *chef de service* who, by simply calling on his men when in the trenches to remove their boots for a quarter of an hour twice a day, brought about a considerable fall in the number of 'frozen feet.' Dr. Temoin's paper was considered by the Academy of such importance that it was decided to make an urgent communication of it to the Minister for War."

IRON CROSSES FOR GERMAN MEDICAL OFFICERS.—A Swiss correspondent writes: "German doctors have not been neglected in the lavish distribution of iron crosses. One of the latest lists of recipients contains the names of 138 medical men, of whom 21 are from Hamburg and 8 from Berlin. Three doctors to whom iron crosses were awarded have died at the front. The casualties among Austrian doctors are much higher than those among their German colleagues. A recent list gives the following figures: taken prisoners, 43; missing, 12; wounded, 74; killed, 13; and sick, 121. The attempt to procure Swiss doctors for service on the Austrian-Hungarian battlefields has not been entirely successful. Comparatively few Swiss medical men accepted the invitation in the first instance, and those who crossed into the Dual Monarchy do not seem to have had a particularly happy time. Quite recently three Swiss doctors resigned their positions in the Austrian medical service and returned home. 'Restrictions in responsibility' is the somewhat enigmatic explanation for their action which they have given the Swiss press."

HOSPITAL SHIP TO DUBLIN.—Our Dublin correspondent writes: "A hospital ship, the *Carisbrook Castle*, arrived at Dublin last week carrying some 500 invalided soldiers. In the work of disembarkation the Royal Army Medical Corps was assisted by voluntary aid units of the St. John Ambulance Brigade, under the command of Dr. Lumsden. 100 of the soldiers were sent to Belfast, and the remainder were distributed among the several Dublin hospitals, including the Red Cross hospital in Dublin Castle. Comparatively few of the soldiers are suffering from wounds, but there are many serious cases of frost-bite."

DUBLIN CASTLE RED CROSS HOSPITAL: A ROYAL COLLEGE OF SURGEONS WARD.—A large number of students, past and present, of the Schools of Surgery of the Royal College of Surgeons in Ireland are serving with His Majesty's Navy and Expeditionary Forces. Those at present in the schools anxious to help in any possible way have formed a committee to collect funds to equip a ward in the Dublin Castle Red Cross Hospital, to be called "The Royal College of Surgeons Ward." The honorary treasurers of the committee—Mr. W. H. Carden, Mr. K. Elmes, Mr. J. F. Lyons, Mr. A. Miller, and Miss M. McMullen—will receive and acknowledge subscriptions from old students and their friends.

WOUNDED SOLDIERS IN BELFAST.—Our Belfast correspondent writes: "On Thursday afternoon, Feb. 18th, 110 wounded and invalided soldiers arrived in Belfast from North Wall, Dublin, to which they had been conveyed from Havre in the hospital ship *Carisbrook Castle*. They were transferred from the ship to the ambulance train of the Great Northern Railway Co. of Ireland, which brought them to Belfast, from which they were distributed as follows: to the Military Hospital, Victoria Barracks, Belfast, 20; to the Ulster Volunteer Hospital and the Samaritan Hospital, 35; to the Mater Infirmorum Hospital, 25; to Newtownards Union Infirmary, 20; and to the County Infirmary, Downpatrick, 10. None were sent to the Royal Victoria Hospital. The men are much less seriously injured than the first batch who came home in November and are suffering mainly from frost-bite, rheumatism, and nervous breakdown."

Lieutenant-Colonel Alex. Barclay Lyon, commanding 1st London Casualty Clearing Station, Duke of York's Headquarters, Chelsea, S.W., asks us to state that five medical officers are required in this unit to bring it up to war establishment. Their services would be for the period of the war only.

Parliamentary Intelligence.

HOUSE OF COMMONS.

WEDNESDAY, FEB. 17TH.

Paratyphoid Fever amongst the Troops.

Mr. BENTHAM asked the Under Secretary for War whether he would state the number of cases and of deaths from paratyphoid fever amongst British soldiers on the Continent of Europe and in the United Kingdom since August 1st, 1914, and the number of such men who had been inoculated against typhoid fever.—Mr. TENNANT wrote in reply: In the Expeditionary Force up to Feb. 11th there had been 45 cases of paratyphoid and one death. No information is available as to the number of cases in the United Kingdom nor as to the number of the cases in the Expeditionary Force in which there had been inoculation.

Antityphoid Inoculation in the Army.

Mr. CHANCELLOR asked the Under Secretary for War whether he was aware that typhoid fever was not considered by the medical profession as contagious in the ordinary acceptation of that term, and that until lately typhoid patients had been treated in general hospitals side by side with others and without infecting them; and, if so, whether he would publish a statement to that effect and circulate it throughout the army.—Mr. TENNANT answered: I am afraid that I cannot agree with my honourable friend. Typhoid is undoubtedly considered to be conveyed by contact, though not to the same extent as scarlet fever, for example, and for some considerable time now special wards in military hospitals have been set apart for these cases.

Mr. CHANCELLOR also asked the right honourable gentleman whether he was prepared from time to time to supply lists of the names and addresses and the condition as regards inoculation of men in the British army who had died from enteric fever.—Mr. TENNANT replied: The names and particulars as regards inoculation of men in the British army who have died from enteric are invariably obtained and filed at the War Office, and I will consider the possibility of furnishing returns from time to time.

Sickness amongst Troops at the Front.

Lord CHARLES BERESFORD asked the Under Secretary for War whether rheumatism, ague, and weak heart from the effects of rheumatic fever brought about by service at the front were included as casualties.—Mr. TENNANT said in reply: The figures recently given to the House by the Prime Minister were confined to battle casualties and did not

include cases of sickness. The latter are, however, reported and notified to the relatives in precisely the same manner as other casualties.

Pneumonia in Military Training Camps.

Replying to Sir ALEXANDER HENDERSON, Mr. TENNANT wrote: The number of cases of pneumonia occurring in military training camps in England and Wales during August, September, and October amounts to 494, the number of deaths 68, and the number discharged from the service 10.

The Medical Arrangements at Post Office Centres.

Mr. W. THORNE asked the Postmaster-General whether attendance by the medical officer of his department was compulsory on all sick telephone operators employed at the General Post Office South who were not sufficiently indisposed to remain at home or became indisposed after their arrival on duty; whether complaints had been made by telephonists employed at these exchanges as to delays and the arrangements for patients who desired attention from the medical officers; whether the number of patients who desired attention was daily so large that it was impossible for the doctor to attend to them in the limited time at her disposal, and that operators were frequently asked, after waiting some hours, to postpone their consultation; would he consider whether the number of the staff employed and the number of applications for medical attention would justify the daily attendance of the medical officers from 10 A.M.; and whether he would cause some inquiry to be made into the sufficiency or otherwise of the medical arrangements at the General Post Office South,—Mr. HOBHOUSE replied: The answer to the first part of the question is that if any medical attention is required by a telephonist who is indisposed either on arrival or subsequently, such attention has to be given by a medical officer of the department. No official complaint that I can trace has been made either as to delay or other arrangements. There has been a considerable amount of minor sickness lately and a consequent congestion of patients and some regrettable delay, though no one has been asked to postpone their consultations. It does not appear to be necessary to keep a medical officer in continual daily attendance as there is always a trained nurse at the General Post Office South, and few of the cases are serious. I am calling for a report on the whole question of medical arrangements at those centres where there is a large attendance of staff.

THURSDAY, FEB. 18TH.

The Surgical Treatment of Wounds.

Mr. KING asked the Under Secretary for War whether the army medical authorities had taken steps to derive advantage from the experiments directed to obtain the best antiseptic for wounds as demonstrated by Sir Watson Cheyne at his recent Hunterian lecture.—Mr. TENNANT said in reply: Full advantage has been taken by the army medical authorities of all recent scientific advances in the surgical treatment of wounds.

Temporary Surgeons in the Royal Navy.

Lord CHARLES BERESFORD asked the Financial Secretary to the Admiralty whether young medical officers were entered into the navy as temporary surgeons over the heads of surgeons of the Royal Naval Volunteer Reserve, and on appointment rank as senior to those officers; whether he was aware that very many of these temporary surgeons had lately been students under the surgeons of the Royal Naval Volunteer Reserve, many of the latter officers being consulting surgeons with responsible hospital appointments in civil life; and whether the Admiralty would take steps to have this disability removed.—Mr. MACNAMARA answered: The facts are as stated in the question of the noble lord, and the question is now receiving the consideration of the Board.

First-aid Classes in Ireland.

Mr. BOLAND asked the Chief Secretary to the Lord Lieutenant of Ireland how many first-aid and ambulance work classes had been organised officially through Government departments in Ireland since the outbreak of war; the number of students enrolled; and what further facilities would now be given with a view to the extension of the number of classes.—Mr. T. W. RUSSELL (on behalf of Mr. BIRRELL) replied: Under regulations issued by the Department of Agriculture over 390 classes had been held in which over 10,000 pupils in all were enrolled. Of these classes, 304 were in first-aid to the injured, 179 in hygiene and emergency nursing, and 8 in ambulance work. The department do not regard the formation of classes in these subjects as any longer a matter of urgency, and accordingly they have since Dec. 31st last required that, except in very exceptional circumstances, classes should be recognised only if conducted under the conditions of a local scheme of technical instruction. If a technical instruction committee agrees to form such classes the department recognise them as eligible for grants under the conditions of their programme for technical schools and classes.

MONDAY, FEB. 22ND.

Release of Medical Non-combatants.

Replying to Lord ROBERT CECIL, Mr. PRIMROSE (Under Secretary for Foreign Affairs) said: An arrangement has been made with the German Government for the mutual release of civilian doctors, and negotiations are now in progress for the mutual release of medical officers of the military and naval forces. In a note to the United States Ambassador of Dec. 31st last H.M.'s Government offered to release the German medical personnel on condition of reciprocity, and we hope that an agreement on this subject will shortly be reached.

Insecticides on Imported Fruit.

Sir WALTER ESSEX asked the Parliamentary Secretary to the Board of Agriculture whether he had recently had complaints of the arrival from overseas of cargoes of apples upon which traces of poisonous insecticides were found, and, if so, in how many cases; whether close observation was being made upon incoming deliveries; and were steps being taken to prevent danger to public health from this source.—Sir HARRY VERNEY answered: No complaints have been made to the Board as to the presence of insecticides on imported fruits. Two cases were, however, brought to their notice last year of the presence of a fungicide, but the amount of the latter was unimportant. The matter is not one with which the Board are empowered to deal, but they published a note in their Journal for June, 1914, warning growers to remove all traces of sprays before marketing their fruit.

TUESDAY, FEB. 23RD.

The Production of Drugs.

Sir J. D. REES asked the Secretary to the Treasury whether the Government proposed to take special steps to facilitate the use of alcohol for commercial purposes in order to create favourable conditions for competition with Germany in the production of fine drugs.—Mr. ACLAND replied: So far as can at present be seen, there is no reason to suppose that the facilities available under the existing law are inadequate for this purpose.

WEDNESDAY, FEB. 24TH.

Spotted Fever in Essex.

Mr. ALDEN asked the Under Secretary for War whether he was aware that spotted fever had broken out in some parts of Essex; whether, under the circumstances, he would give special orders that the billeting carried out in all such districts should be done as carefully as possible and due precaution taken against overcrowding; and whether the local sanitary authorities were in all cases consulted before soldiers were billeted in large numbers.—Mr. TENNANT replied: I regret to say that spotted fever has broken out in some parts of Essex. Special orders have been issued with regard to billeting, and due precautions are being taken against overcrowding. The local sanitary authorities are consulted in all cases.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BURLAND, J. A., L.R.C.P. & S. Irel., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Paignton District of the county of Devon.

HENNESSY, D., L.R.C.P. & S. Edin., L.F.P.S. Glasg., has been appointed Medical Adviser to the Irish Insurance Commissioners in Bandon and Murragh Dispensary Districts.

HOWIE, MARY E., M.B., B.S. Durh., has been appointed School Medical Inspector under the Aberdare Education Authority.

LYND, J. C., L.R.C.P. & S. Edin., L.F.P.S. Glasg., has been appointed Medical Officer to the Limavady Post Office and Subdistrict Offices.

NICHOLSON, BALFOUR S., M.B., C.M. Glasg., has been appointed Tuberculosis Officer for Derby County.

SHARPE, FREDERICK A., M.D. Lond., has been appointed Medical Officer of Health of Barnsley.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

AYLESBURY, ROYAL BUCKINGHAMSHIRE HOSPITAL.—House Surgeon, unmarried. Salary £150 per annum, with board, washing, and lodging.

BARROW-IN-FURNESS, NORTH LONSDALE HOSPITAL.—House Surgeon. Salary £150 per annum, with residence, board, and laundry.

BIRKENHEAD BOROUGH HOSPITAL.—Senior House Surgeon. Salary £120 per annum, with board and laundry. Also Junior House Surgeon. Salary £100 per annum, with board and laundry.

BIRMINGHAM CITY MENTAL HOSPITAL, Rubery-hill.—Female Junior Assistant Medical Officer. Salary £200 per annum, with apartments, board, laundry, &c.

BIRMINGHAM, YARDLEY-ROAD SANATORIUM AND ANTI-TUBERCULOSIS CENTRE.—Third Assistant Medical Officer. Salary £200 per annum, with board and residence.

BLACKBURN AND EAST LANCASHIRE ROYAL INFIRMARY.—House Surgeons, Senior and Junior. Salary £150 and £130 per annum, with board, residence, and laundry.

BOLTON UNION.—Resident Assistant Medical Officer for Townleys Hospitals at Farnworth, near Bolton. Salary £250 per annum, with apartments, washing, and attendance.

BOOTLE BOROUGH HOSPITAL.—Junior House Surgeon. Salary £100 per annum, with residence, board, and laundry.

BRISTOL EYE HOSPITAL.—House Surgeon. Salary £100 per annum, with board, residence, and laundry.

BRISTOL GENERAL HOSPITAL.—Resident Obstetric Officer for six months. Salary at rate of £120 per annum, with board, residence, &c.

BROADMOOR STATE CRIMINAL LUNATIC ASYLUM, Crowthorne, Berks.—Assistant Medical Officer, unmarried. Salary £250 per annum, with board, rooms, washing, and attendance.

BURNLEY, VICTORIA HOSPITAL.—House Surgeon. Salary £135 per annum, with residence, board, and washing.

BURSLEM, HAYWOOD HOSPITAL.—Female Resident Medical Officer. Salary £100 per annum, with board, residence, and laundry.

BURY INFIRMARY.—Junior House Surgeon. Salary £150 per annum, with board, residence, and washing.

CAMBERWELL, CONSTANCE-ROAD INSTITUTION, East Dulwich, S.E.—Temporary Resident Medical Officer. Salary at rate of £300 per annum, with apartments, board, and washing.

CANTERBURY, KENT COUNTY ASYLUM, Chartham.—Third Junior Assistant Medical Officer. Salary £250 per annum, with quarters, board, washing, &c.

CANTERBURY MENTAL HOSPITAL.—Assistant Medical Officer, unmarried. Salary £250 per annum, with board, lodging, washing, and attendance. Also Locum Tenent Assistant Medical Officer for about a fortnight. Salary £8 6s. per week, with board, lodging, washing, and attendance.

CANCER HOSPITAL, Fulham-road, S.W.—House Surgeon for six months. Salary £100 per annum.

CARMARTHEN, JOINT COUNTIES ASYLUM.—Temporary Second Assistant Medical Officer. Salary at rate of £200 per annum, with board, lodging, washing, &c.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.—Resident House Surgeon. Salary £50 per annum, with board and residence.

CHESTERFIELD AND NORTH DERBYSHIRE HOSPITAL.—Third Honorary Anæsthetist.

CROYDON GENERAL HOSPITAL.—Honorary Radiographer.

DARLINGTON HOSPITAL AND DISPENSARY.—House Surgeon. Salary £150 per annum, with board, attendance, and laundry.

DEVONPORT, ROYAL ALBERT HOSPITAL.—House Surgeon, unmarried. Salary £150 per annum, with board and laundry.

DUDLEY, GUEST HOSPITAL.—Senior Resident Medical Officer. Also Assistant House Surgeon for six months. Salary £150 and £120 per annum respectively, with board, residence, attendance, and washing.

DUMFRIES AND GALLOWAY ROYAL INFIRMARY.—Female Resident House Surgeon. Salary £120 per annum.

EAST HAM BOROUGH EDUCATION COMMITTEE.—Temporary Assistant School Medical Officer. Salary £300 per annum.

EAST HAM, COUNTY BOROUGH OF.—Tuberculosis Officer. Salary at rate of £500 per annum.

ECCLES AND PATRICROFT HOSPITAL.—House Surgeon, unmarried. Salary £70 per annum, with board, lodging, and washing.

EDMONTON UNION INFIRMARY, Bridport-road, Upper Edmonton.—Second Assistant Medical Officer, unmarried. Salary £200 per annum, with residential allowances.

ESSEX EDUCATION COMMITTEE.—Temporary Female School Medical Inspector. Salary £300 per annum.

FIJI (THE GILBERT AND ELLICE ISLANDS PROTECTORATE AND THE SOLOMON ISLANDS PROTECTORATE).—Three Medical Officers. Salary £350 per annum, free quarters provided.

GLASGOW, GOVAN DISTRICT ASYLUM, Hawkhead, Cardonald.—Senior Assistant Medical Officer. Salary £250 per annum, with board, apartments, and laundry.

GREAT YARMOUTH HOSPITAL.—House Surgeon, unmarried. Salary £200 per annum, with board, lodging, and washing.

HALIFAX ROYAL INFIRMARY.—Second and Third House Surgeons, unmarried. Salary £120 and £100 per annum respectively, with residence, board, and washing.

HAMMERSMITH INFIRMARY AND WORKHOUSE, Ducane-road, Wormwood Scrubs, W.—Assistant Medical Officer and Second Assistant Medical Officer. Salary £180 and £170 per annum respectively, with board, lodging, washing, and attendance.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.—Assistant Casualty Medical Officer, unmarried, for six months. Salary £30, with board, residence, &c.

HULL, CITY AND COUNTY OF KINGSTON-UPON-HULL.—Temporary Senior Tuberculosis Medical Officer. Salary at rate of £500 per annum.

HULL, VICTORIA CHILDREN'S HOSPITAL, Park-street.—Resident House Surgeon and Resident Assistant House Surgeon. Salary £60 and £50 per annum respectively, with board and laundry.

LEICESTER ROYAL INFIRMARY.—House Physician. Salary at rate of £120 per annum.

LIVERPOOL, ROYAL SOUTHERN HOSPITAL.—Three House Surgeons and Two House Physicians, each for six months. Salary at rate of £60 per annum with board and residence.

LIVERPOOL, WEST DERBY UNION, MILL-ROAD INFIRMARY.—Two Temporary Assistant Resident Medical Officers, unmarried. Salary at rate of £300 per annum each, with board, &c.

LONDON FEVER HOSPITAL, Liverpool-road, N.—Assistant Resident Medical Officer. Salary £250 per annum, with residence and board.

LONDON HOSPITAL, E.—Assistant Surgeon.

MANCHESTER, COUNTY ASYLUM, Prestwich.—Assistant Medical Officer, unmarried. Salary £250 per annum, with board, apartments, attendance, and washing.

MANCHESTER, HULME DISPENSARY, Dale-street, Stretford-road.—House Surgeon. Salary £180 per annum, with apartments, attendance, coal, and gas.

MANSFIELD AND DISTRICT HOSPITAL.—House Surgeon. Salary £200 per annum, with apartments, board, and laundry.

MELTON SUFFOLK DISTRICT ASYLUM.—Second Assistant Medical Officer, unmarried. Salary £250 per annum, with board, apartments, attendance, and laundry.

METROPOLITAN ASYLUMS BOARD: INFECTIOUS HOSPITALS SERVICE.—Assistant Medical Officers. Salary £250 per annum, with board, lodging, and washing.

MILLER GENERAL HOSPITAL FOR SOUTH-EAST LONDON, Greenwich-road, S.E.—Senior House Surgeon for six months. Salary £100 per annum, with board, residence, and laundry.

NEWPORT (MON.), ROYAL GWENT HOSPITAL.—Resident Medical Officer. Salary for first six months at rate of £100 per annum, second six months £125, and third six months £150, with board, residence, and laundry.

NORFOLK EDUCATION COMMITTEE.—Assistant Medical Officer. Salary £300 per annum.

NOTTINGHAM GENERAL HOSPITAL.—Assistant House Physician for six months. Salary at rate of £100 per annum, with board, residence, and laundry.

NOTTINGHAM, NOTTS COUNTY COUNCIL.—Second Assistant Tuberculosis Officer. Salary £400 per annum.

PADDINGTON GREEN CHILDREN'S HOSPITAL, London, W.—House Surgeon. Salary at rate of £80 per annum, with board, residence, and washing.

PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham, N.—Honorary Physician to the Skin Department.

ROYAL DENTAL HOSPITAL OF LONDON, Leicester-square.—House Anæsthetist. Salary £60 per annum.

ROYAL EYE HOSPITAL, Southwark.—House Surgeon. Board and quarters, &c.

ROYAL HOSPITAL FOR DISEASES OF THE CHEST, City-road, London, E.C.—Resident Medical Officer for six months. Salary at rate of £120 per annum, with board, lodging, and washing.

ROYAL WATERLOO HOSPITAL FOR CHILDREN AND WOMEN, S.E.—Second Resident Medical Officer. Salary at rate of £100 per annum, with board and washing. Also Temporary Honorary Assistant Physician to Out-patients.

ST. MARK'S HOSPITAL FOR CANCER, FISTULA, AND OTHER DISEASES OF THE RECTUM, City-road, E.C.—House Surgeon. Salary £100 per annum, with board, lodging, and washing.

ST. MARY ISLINGTON INFIRMARY, Highgate Hill, N.—Junior Assistant Medical Officer. Salary at rate of £140 per annum, and all found.

ST. MARY'S HOSPITAL FOR WOMEN AND CHILDREN, Plaistow, E.—Junior Resident Medical Officer. Salary at rate of £90 per annum, with board, residence, and laundry.

SALFORD ROYAL HOSPITAL.—Casualty House Surgeon. Salary at rate of £100 per annum, with board and residence.

SALFORD UNION INFIRMARY, Hope, Pendleton.—Medical Superintendent. Salary £500 per annum, &c.

SALISBURY GENERAL INFIRMARY.—House Surgeon and Assistant House Surgeon, unmarried. Salary £100 and £75 per annum respectively, with apartments, board, lodging, and washing.

SERBIAN RELIEF FUND.—Physicians required.

SHEFFIELD CHILDREN'S HOSPITAL.—House Surgeon. Salary £150 per annum, with board and residence.

SHEFFIELD ROYAL HOSPITAL.—Female Assistant House Surgeon and Female Assistant House Physician. Salary £85 and £80 per annum respectively, with board, residence, and washing.

SHEFFIELD ROYAL INFIRMARY.—House Surgeon and Assistant House Physician. Salary £100 per annum, with board and residence.

SHREWSBURY, ROYAL SALOP INFIRMARY.—House Physician. Salary at rate of £110 per annum, with board and apartments.

SOUTH AFRICA, FRERE HOSPITAL, East London.—Resident Medical Officer, unmarried. Salary £300 per annum, with board, lodging, and washing.

SOUTH LONDON HOSPITAL FOR WOMEN.—Female Assistant Physician.

SOUTH SHIELDS, INGHAM INFIRMARY AND SOUTH SHIELDS AND WESTOE DISPENSARY.—Junior House Surgeon. Salary £115 per annum, with residence, board, and washing.

STOCKPORT INFIRMARY.—Junior House Surgeon. Salary £100 per annum, with board, washing, and residence.

SUNDERLAND ROYAL INFIRMARY, CHILDREN'S HOSPITAL.—Female Resident Medical Officer for six months. Salary £100 per annum, with board, residence, and laundry.

SWANSEA UNION INSTITUTION.—Resident Assistant Medical Officer. Salary £295 per annum.

TAUNTON AND SOMERSET HOSPITAL, Taunton.—Senior House Surgeon. Salary £120 per annum, with board, lodging, and laundry.

TRURO, ROYAL CORNWALL INFIRMARY.—House Surgeon, unmarried. Salary £150 per annum, with rooms, board, and washing.

VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—House Physician and House Surgeon for six months. Salary £40 each, with board and lodging.

WAKEFIELD CLAYTON HOSPITAL.—Female Junior House Surgeon. Salary £120 per annum, all found.

WARRINGTON INFIRMARY AND DISPENSARY.—Senior House Surgeon. Salary at rate of £200 per annum, with board, apartments, and laundry.

WARRINGTON, LANCASHIRE COUNTY ASYLUM, Winwick.—Locum Tenens Medical Officer, unmarried. Salary 6 guineas per week, with apartments, board, attendance, and washing.

WARWICK COUNTY LUNATIC ASYLUM.—Temporary Assistant Medical Officer. Salary £6. 6s. per week, with board, &c.

WEI-HAI-WEI COLONY.—Medical Officer. Salary £300 per annum, with free unfurnished quarters, &c.

WEST BROMWICH AND DISTRICT HOSPITAL.—House Surgeon and Assistant House Surgeon, unmarried. Salary £150 and £120 per annum respectively, with residence, board, and laundry.

WESTMINSTER HOSPITAL, S.W.—Qualified Medical Men who are able and willing to do so to volunteer their help.

WEST HAM AND EASTERN GENERAL HOSPITAL, Stratford, E.—Junior House Surgeon. Salary at rate of £100 per annum, with board, residence, and washing.

WEST RIDING OF YORKSHIRE, CARDIGAN SANATORIUM, near Wakefield.—Assistant Medical Officer. Salary £300 per annum, with partial board.

WEST RIDING OF THE COUNTY OF YORK, SCALEBOR PARK ASYLUM, Burley-in-Wharfedale.—Assistant Medical Officer. Salary £250 per annum, with rooms, board, attendance, and washing. Or Locum Tenens. Salary £5 5s. per week.

WHITEHAVEN AND WEST CUMBERLAND INFIRMARY.—House Surgeon. Salary £150 per annum, with board, lodging, and attendance.

WIGAN, ROYAL ALBERT EDWARD INFIRMARY AND DISPENSARY.—Female Junior House Surgeon. Salary £130 per annum, with board, apartments, and washing.

YORK DISPENSARY.—Resident Medical Officer. Salary £200 per annum, with board, lodging, and attendance.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Downpatrick, County Down; at Enniskillen, County Fermanagh; and at Milford, in the county of Hampshire.

Births, Marriages, and Deaths.

BIRTHS.

CAMERON.—On Feb. 17th, at St. Thomas's-street, S.E., the wife of H. C. Cameron, M.D., a daughter.

HUSSEY.—On Feb. 19th, at Castle-street, Farnham, Surrey, the wife of James Hussey, M.D., of a daughter.

MARRIAGES.

PITT—WATKINS.—On Feb. 11th, at St. Peter's Church, Earley, Berks, Robert Cecil Pitt, M.R.C.S., L.R.C.P., to Beatrice Irene, only daughter of Mr. and Mrs. Alric Watkins, of The Traddock, Austwick, Yorkshire.

DEATHS.

FOGERTY.—On Feb. 14th, at George-street, Limerick, George Joseph Fogerty, Staff Surgeon, R.N.

HARPER.—On Feb. 16th, at Bathealton, Charles Harper, M.R.C.S., L.R.C.P., late Surgeon R.N., aged 87 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

BOOKS, ETC., RECEIVED.

BAILLIÈRE, J. B., ET FILS, Paris.
La Pratique Héliothérapeutique. Par le Dr. Jaubert. Price Fr.1.50. Le Traitement des Anémies. Par les Docteurs H. Vaquez et Ch. Aubertin. Price Fr.1.50.

BAILLIÈRE, TINDALL, AND COX, London.
A System of Veterinary Medicine. By Various Writers. Edited by E. Wallis Hoare, F.R.C.V.S. Vol. II.: General Diseases. Price £2 10s. net, complete in two volumes.

CATHOLIC SUMMER SCHOOL PRESS, New York.
The Century of Columbus. By James J. Walsh, K.C.St.G., M.D., Ph.D., LL.D., &c. Price $3.50, post paid.

CHURCHILL, J. AND A., London.
Morris's Human Anatomy: A Complete Systematic Treatise by English and American Authors. Edited by C. M. Jackson, M.S., M.D. Fifth edition, revised and largely rewritten. Price 30s. net.

DORNAN, W. J., Philadelphia.
Transactions of the American Gynæcological Society. Vol. XXXIX. 1914. Southern Surgical and Gynæcological Association, U.S.A. Transactions. Vol. XXVI. 1913. Edited by W. D. Haggard, M.D.

FORD AND SON, Melbourne.
University of Melbourne Medical School Jubilee, 1914.

LIBRAIRIE HACHETTE ET CIE, Paris and London.
Vade-Mecum for the Use of Officers and Interpreters in the Present Campaign. French and English Technical and Military Terms. By Eugène Pulmon. New and revised edition. Price Fr.2.

LONGMANS, GREEN, AND CO., London.
Quain's Elements of Anatomy. Vol. IV., Part I.: Osteology and Arthrology. By T. H. Bryce. Eleventh edition. Price 12s. 6d. net.

POOR LAW PUBLICATIONS COMPANY, Furnival street, London, E.C.
Modern Medical and Surgical Nursing for Probationers (Selected Lectures). By C. Seymour Yapp, Matron, Poor-law Hospital, Ashton-under-Lyne.

PUTNAM'S SONS, G. P., New York and London.
Dynamic Evolution: A Study of the Causes of Evolution and Degeneracy. By Casper L. Redfield. Price 6s. net.
A Medical Dictionary for Nurses. By Amy E. Pope. Price 3s. 6d. net.

SMITH, ELDER, AND CO., London.
Early Diagnosis of Heart Failure and other Essays on the Heart and Circulation. By T. Stacey Wilson, M.D. Edin., F.R.C.P. Lond., Senior Physician, General Hospital, Birmingham. Price 12s. 6d. net.

UNIVERSITY PRESS, Cambridge.
The Determination of Sex. By L. Doncaster, Sc.D. Price 7s. 6d. net.
An Introduction to the Study of Colour Vision. By J. Herbert Parsons, D.Sc., F.R.C.S., Ophthalmic Surgeon, University College Hospital; Surgeon, Royal London Ophthalmic Hospital. Price 12s. 6d. net.

WILEY, JOHN, AND SONS, New York. CHAPMAN AND HALL, London.
Air, Water, and Food from a Sanitary Standpoint. By Alpheus G. Woodman and John F. Norton. Fourth edition, revised. Price 8s. 6d. net.

Notes, Short Comments, and Answers to Correspondents.

"OF GOOD REPORT."

DURING the past week a number of medical men in different parts of England have forwarded for our information copies of a circular letter and enclosures which they have received through the post from the secretary of Winox, Ltd., 66, London Wall, E.C. The object of these communications is to bring the claims of "Winox Wine Food" before members of the medical profession. The secretary's letter begins as follows:—

> In requesting you to read the enclosed Clinical Reports we feel we are only asking what is due to you, to us, and to your patients, especially those recovering from wounds, operations, or sickness resulting from the War.

And concludes thus:—

> We ask you to give "Winox Wine Food" a trial, and are willing to pay you three guineas for a report on the results in three or more cases. We do not require or expect that all these trials will be entirely favourable ..... "Winox" is no "panacea" ..... but from the reports we send you we feel confident that a very large majority of such trials must be satisfactory, and on these grounds will pay for all without distinction. Will you let us know how many bottles we may send you for the purpose of this investigation?

The enclosures consist of a postcard, to be filled in by the medical man, asking for samples of the preparation and agreeing to test and report upon them; a pamphlet entitled "20 Clinical Reports on Winox Wine Food" and marked "not for general publication," and an additional signed report by a medical man, describing himself as "Civilian Surgeon, R.A.M.C., &c.," upon three wounded soldiers from the front who each made a good recovery after the administration of this substance. The pamphlet contains 20 signed letters from medical practitioners testifying to the value of Winox Wine Food, and after each signature is printed an extract from the Medical Directory, 1914, while the last two pages contain appreciations from nurses and from members of the public. With the scientific value or otherwise of these testimonials we are not here concerned, but the distribution of them to other practitioners, in conjunction with an offer of 3 guineas each for further reports, is serious. The proprietors of Winox, by the wording of their secretary's letter, have no doubt protected themselves against a direct charge of bribery, and we do not suggest that the proffered fee would be withheld in the event of an adverse report. But we regard the procedure as a most undesirable innovation in methods of advertisement, while the medical men whose reports accompany the circular are inviting, and indeed receiving, unfavourable comment from their professional brethren. They should at once make their position clear. Have they, or any of them, had the fee for their reports?

WANTED, A HOME.

To the Editor of THE LANCET.

SIR,—Perhaps one of your readers could help me. I want to find a home for a girl who is weak mentally and a kleptomaniac. She is not certifiable. Her parents could pay about £1 per week. I am quite out of touch with these matters, and I know people have occasionally obtained valuable help from your correspondents.

I am, Sir, yours faithfully,

Feb. 16th, 1915. C. A. J.

THE NATIONAL LEAGUE FOR PHYSICAL EDUCATION AND DEVELOPMENT.

THIS league, which is now amalgamated with the Mansion House Council on Health and Housing, in its ninth annual report for the year ending October, 1914, shows that considerable gain in efficiency has been made and overlapping reduced by its coöperation with many other bodies having allied aims—the National Association for the Prevention of Infant Mortality, the National Society of Day Nurseries (which gained for the latter recognition of the Board of Education and State financial aid), the Child Welfare Bureau of the Social Welfare Association, the Voluntary Central Health Committee for London, and many others. The report this year omits the branch reports on economic grounds, but it contains that of the Mansion House Committee on Health and Housing. Last year's comprehensive report on school clinics at home and abroad has led to a large increase in these institutions during the past year. A separate included report is that of the Association of Infant Consultations and Schools for Mothers, the list of affiliated societies of which occupies nearly three pages of small type. Its

report, which is signed by Dr. Eric Pritchard as chairman, and the Hon. Eleanor Ritchie as honorary secretary, shows the work done in mothercraft competitions and in other ways. There are some excellent leaflets and pamphlets published by the league, among which may be specially mentioned Hints on the Management of Children from 1 to 5 Years of Age, and a telling poster illustrating in three pictures a bad way, a better way, and the best way of feeding infants. As to more important publications, the excellent little book entitled "Mothercraft" was reviewed in THE LANCET, Feb. 13th, 1915, p. 333.

The address of the league, which has on its council Sir Clifford Allbutt, Sir William Osler, Sir Lauder Brunton, Sir John Tweedy, Sir Rickman Godlee, with many other representative members of the medical profession, is 4, Tavistock-square, London, W.C.

CENTIGRADE INTO FAHRENHEIT.

To the Editor of THE LANCET.

SIR,—Having experienced some difficulty in converting Centigrade degrees into Fahrenheit, I have solved the question, personally, by a simple plan. Centigrade 0° equals Fahrenheit 32°, freezing point. Each degree of Centigrade upwards requires an *addition* of 1·8° Fahrenheit. Taking, for example, 20° Centigrade, the equivalent of Fahrenheit is found by multiplying the 20° Centigrade by 1·8° Fahrenheit. This gives 36° Fahrenheit. Add to this the starting-point, 32° Fahrenheit, the result is 68° Fahrenheit. In the minus scale of Centigrade the 1·8° Fahrenheit is *deducted*. Example: − 15° Centigrade requires 15 times 1·8° Fahrenheit, equals 27°. Deduct this from 32° Fahrenheit and the result is + 5° Fahrenheit.

There are only two factors to be remembered, that 0° Centigrade is equivalent to 32° Fahrenheit, and that each degree of Centigrade requires 1·8° of Fahrenheit to be added or deducted as the plus or minus scale is applied.

I am, Sir, yours faithfully,

Feb. 23rd, 1915. QUATORZE, M.D.

FIRES DUE TO AIR RAIDS.

THE British Fire Prevention Committee has issued a circular containing some useful directions as to what to do in the event of a fire breaking out due to an air raid. The precautions enjoined are for the most part applicable to outbreaks of fire from other causes, and are such as would be adopted by sensible persons in any case. Free copies of the circular may be had by applying to the offices of the committee, 8, Waterloo-place, Pall Mall, London, S.W.

WEIGHT AND MEASUREMENTS OF GERMAN SOLDIERS.

A CORRESPONDENT writing on the physical measurements of soldiers points out that the average weights and heights of German adult men who in time of peace were considered fit for military service by the army medical authorities were as follows: average height, 166 cm. (5 ft. 5·3 in.); average weight, 65 kg. (10 st. 3·3 lb.); chest measurement, taken with the arms evenly extended, close under the nipples in front and close under the angles of the shoulder-blades behind, average inspiration, 89 cm. (35 in.), and average expiration, 82 cm. (32·3 in.), showing a maximum difference between inspiration and expiration of 7 cm. (2¾ in.); girth, taken 1 cm. above the umbilicus, 75 cm. (29½ in.). It might be interesting to know how far these standards are being maintained at the present time among the new levies for the German army.

A SUSSEX MEDICAL MAN'S GOLDEN WEDDING.

Dr. G. A. Jeffery and Mrs. Jeffery, of Hailsham, celebrated their golden wedding on Feb. 21st, and received numerous messages of congratulation. The marriage ceremony took place at Upper Clapton, and of the six bridesmaids no fewer than five are still living. A Cornishman by birth, Dr. Jeffery has resided in Sussex for 60 years, and for half a century practised at Eastbourne, where he also held a number of public appointments. On relinquishing work, Dr. Jeffery removed to Hailsham, not far from Eastbourne, and despite his great age—he is in his 91st year—is able to continue his active interest in local affairs. He is an alderman and justice of the peace for East Sussex.

RUBBER HEELS.

M. S.—There is, we believe, no evidence available of any connexion between the use of hard leather-heeled boots and diseases of the spinal column or nervous system, despite the unnaturally hard surfaces on which millions of us spend our lives. The central nervous system is so jealously guarded by muscles, intervertebral discs and cerebro-spinal fluid, and meninges and ligaments, that it habitually withstands far greater shocks than hard heels are capable of inflicting. The joints and bones of the skeleton are also protected by muscles, cartilages, and ligaments. It is, however, conceivable that boot heels of soft material may be of service in softening jars to inflamed joints—in chronic arthritis, for instance; but the end is better secured by placing a layer of spongy indiarubber inside the boot rather than outside. What H. J. Byron called "the midnight footfall of the peeler on his beat" is no doubt usefully muffled by indiarubber heels and soles.

F. H. B.—In Continental States, where the metric system is now generally adopted for the dispensing and preparing of medicines, all liquids are weighed, and the terms gramme, centigramme, and kilogramme only are used. This avoids the possibility of errors, which the similarity of the names decagramme and decigramme might lead to.

Falstaff.—Honey contains approximately 70 per cent. of the sugars known as lævulose and dextrose in about equal proportions. Fruits contain the same sugars, but in smaller proportion

R. H.—It is most unsatisfactory to advise without examination. We should suggest varying the sulphate of magnesia by prescribing ℥ ss. of pure petroleum every night.

Radium.—There is no scientific reason why a water of permanent radio-activity should not be prepared.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.
THURSDAY.—Papers:—Prof. W. A. Bone, Prof. H. L. Callendar, and Mr. H. J. Yates: A Bolometric Method of Determining the Efficiency of Radiating Bodies.—Mr. E. Chappell: The Simplification of the Arithmetical Processes of Involution and Evolution (communicated by Prof. W. E. Dalby).—Mr. F. E. Rowett: The Elastic Properties of Steel at Moderately High Temperatures (communicated by Prof. B. Hopkinson).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
WEDNESDAY.
SECTION OF OPHTHALMOLOGY (Hon. Secretaries—Leslie Paton, Elmore W. Brewerton): at 8.30 P.M.
Cases (at 8 P.M.)
Papers:
Mr. Leslie Paton: The Montessori System and its Use for Children with Defective Sight.
Mr. Bishop Harman: The Education of Children with Defective Vision.
Mr. J. H. Fisher: Retinitis in Pregnancy.
SECTION FOR THE STUDY OF DISEASE IN CHILDREN.—The Members of this Section are specially invited to attend the discussion on the first two papers at the meeting of the Section of Ophthalmology. (See above.)
THURSDAY.
SECTION OF BALNEOLOGY AND CLIMATOLOGY (Hon. Secretaries—Charles W. Buckley, J. Campbell McClure): at 5.30 P.M.
Paper:
Dr. Leonard Williams: The Teutonic Health Resorts and their Substitutes.
NOTE.—Members of other Sections are invited.
SECTION OF MEDICINE.—Members of the Section of Medicine are specially invited to attend the meeting of the Section of Balneology and Climatology. (See above.)
SECTION OF SURGERY.—Members of the Section of Surgery are specially invited to attend the meeting of the Section of Balneology and Climatology. (See above.)
FRIDAY.
SECTION OF LARYNGOLOGY (Hon. Secretaries—Cecil I. Graham, W. D. Harmer): at 4 P.M.
Cases and Specimens:
Will be shown by the following:—Dr. William Hill, Mr. Seccombe Hett, Sir William Milligan, Mr. Cecil Graham.
Dr. Pegler: Specimens of Superior Maxillæ, illustrating Abnormal Antra and Nasal Fossæ.
SECTION OF ANÆSTHETICS (Hon. Secretaries—Cecil Hughes, F. E. Shipway): at 8.30 P.M.
Discussion:
On the Influence of Preliminary Narcotics on the (*a*) Induction, (*b*) Maintenance, (*c*) After-results of Anæsthesia (to be opened by Dr. J. Blumfeld).

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.
MONDAY.—8.30 P.M., Paper:—On the Outbreak of Toxic Jaundice of a New Type among Aeroplane Workers—(*a*) Clinical and Toxicological Portion by Dr. W. H. Willcox, (*b*) Pathological Portion by Dr. B. H. Spilsbury, (*c*) Industrial Aspects by Dr. T. M. Legge.

RÖNTGEN SOCIETY, Institution of Electrical Engineers, Victoria Embankment, W.C.
TUESDAY.—8.15 P.M., General Meeting. Paper:—Mr. A. Fleck: The Chemistry of the Radio Elements.

NORTH-EAST LONDON CLINICAL SOCIETY, Prince of Wales's Hospital, Tottenham, N.
THURSDAY.—4.15 P.M., Clinical Meeting.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY, Society's Rooms, West London Hospital, Hammersmith-road, W.
FRIDAY.—8.30 P.M., Paper:—Dr. R. Morton: The X Ray Appearances of Some Common Disorders of the Stomach (with lantern slides).

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

MONDAY, WEDNESDAY, AND FRIDAY.—5 P.M., Hunterian Lectures:—Prof. A. Keith: The Anatomy and Mechanism of the Alimentary Canal. (Illustrated by specimens from the Museum of the College and by the use of the epidiascope.) (Lectures IV., V., and VI.)

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Dr. Simson: Diseases of Women. 10.30 A.M., Medical Registrar: Demonstration of Cases in Wards. 12 noon, Dr. Bernstein: Pathological Demonstration. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. D. Armour: Operations. Dr. Pritchard: Bacterial Therapy Department. Mr. B. Harman and Mr. Gibb: Diseases of the Eye.

TUESDAY.—10 A.M., Dr. Owen: Demonstration of Cases in Wards. 12 noon, Mr. T. Gray: Demonstration of Fractures, &c. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. 11 A.M., Mr. Souttar: Demonstration of Minor Operations. 12 noon, Lecture:—Mr. Souttar: Abdominal Diagnosis. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women. Mr. Gibb: Diseases of the Eye.

THURSDAY.—9 A.M., Dr. Bernstein: Bacterial Therapy Department. 12 noon, Lecture: Dr. G. Stewart: Neurological Cases. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. D. Armour: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 10.30 A.M., Surgical Registrar: Demonstration of Cases in Wards. 12.15 P.M., Lecture:—Dr. Bernstein: Applied Pathology. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 12 noon, Lecture:—Mr. Souttar: Surgical Anatomy of the Abdomen. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10.30 A.M., Surgical Out-patient (Mr. E. Gillespie). 2.30 P.M., Medical Out-patient (Dr. T. R. Whipham); Gynæcological (Dr. J. B. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

TUESDAY.—2.30 P.M., Operations. Clinics:—Medical Out-patient (Dr. A. G. Auld); Surgical (Mr. Howell Evans); Nose, Throat, and Ear (Mr. H. D. Gillies). X Rays and Electrical Methods (Dr. Metcalfe). 3.30 P.M., Medical In-patient (Dr. A. J. Whiting). 4.30 P.M., Special Lecture:—Mr. T. H. C. Benians: The Diagnosis of Disease by Clinico-pathological Methods (with illustrative cases).

WEDNESDAY.—Clinics:—2 P.M., Throat Operations (Mr. Gillies). 2.30 P.M., Children's Out-patient (Dr. T. R. Whipham); Skin (Dr. G. N. Meachen); Eye (Mr. Brooks).

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:- Medical Out-patient (Dr. A. J. Whiting); Surgical (Mr. Carson); X Rays and Electrical Methods (Dr. Metcalfe)

FRIDAY.—2.30 P.M., Operations. Clinics:—Medical Out-patient (Dr. A. G. Auld); Surgical (Mr. E. Gillespie); Eye (Mr. R. P. Brooks).

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.
THURSDAY.—5.15 P.M., Clinical Lecture.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

TUESDAY.—4 P.M., Dr. C. R. Kempster: X Rays. Rodent Ulcer.
THURSDAY.—6 P.M., Chesterfield Lecture:—Dr. M. Dockrell: Common Hypertrophies.

MANCHESTER HOSPITALS POST-GRADUATE CLINICS.

THURSDAY.—ANCOATS HOSPITAL, Mill-street.—4.30 P.M., Dr. D. E. Core: Parasyphilis.

For further particulars of the above Lectures, &c., see Advertisement Pages.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index and Title-page to Vol. II. of 1914 were given in THE LANCET of Dec. 26th, 1914.

VOLUMES AND CASES.

VOLUMES for the second half of the year 1914 are now ready. Bound in cloth, gilt lettered, price 16*s.*, carriage extra.

Cases for binding the half year's numbers are also ready. Cloth, gilt lettered, price 2*s.*, by post 2*s.* 3*d.*

To be obtained on application to the Manager, accompanied by remittance.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will ensure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

THE COLONIAL AND FOREIGN EDITION (printed on thin paper) is published in time to catch the weekly Friday mails to all parts of the world.

The rates of subscriptions, post free from THE LANCET Offices, have been reduced, and are now as follows:—

FOR THE UNITED KINGDOM.		TO THE COLONIES AND ABROAD.	
One Year	£1 1 0	One Year	£1 5 0
Six Months	0 12 6	Six Months	0 14 0
Three Months	0 6 6	Three Months	0 7 0

(The rate for the United Kingdom will apply also to Medical Subordinates in India whose rates of pay, including allowances, is less than Rs.50 per month.)

Subscriptions (which may commence at any time) are payable in advance. Cheques and Post Office Orders (crossed "London County and Westminster Bank, Covent Garden Branch") should be made payable to the Manager, Mr. CHARLES GOOD, THE LANCET Offices, 423, Strand, London, W.C.

TO COLONIAL AND FOREIGN SUBSCRIBERS.

SUBSCRIBERS ABROAD ARE PARTICULARLY REQUESTED TO NOTE THE RATES OF SUBSCRIPTIONS GIVEN ABOVE.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the above rates, whatever be the weight of any of the copies so supplied.

SOLE AGENTS FOR AMERICA—MESSRS. WILLIAM WOOD AND CO., 51, Fifth Avenue, New York, U.S.A.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Feb. 24th, 1915.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Feb. 18	29·34	S.W.	0·29	77	51	44	46	48	Raining
,, 19	29·08	S.W.	0·11	75	49	44	43	45	Raining
,, 20	29·13	S.W.	...	77	48	41	40	41	Cloudy
,, 21	29·29	S.W.	...	77	47	34	35	36	Fine
,, 22	29·18	S.W.	0·10	50	43	34	38	39	Cloudy
,, 23	29·55	N.W.	0·25	78	42	36	34	36	Cloudy
,, 24	29·98	N.	...	84	38	33	32	34	Cloudy

The following magazines, journals, &c., have been received:— American Journal of Obstetrics, Journal of Obstetrics and Gynæcology of the British Empire, Canadian Journal of Medicine and Surgery, British Dental Journal, American Medicine, Albany Medical Annals, Journal of Tropical Medicine and Hygiene, Dominion Medical Monthly, Medical Review of Reviews, Annales Gynécologie et d'Obstétrique, Canadian Practitioner and Review, Archives of Pediatrics, &c.

Communications, Letters, &c., have been received from—

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